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length: 4102 (circular)

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  1                           M I  C Q K  F C V  V L L H  W E F  I Y V  I T A F  N L S

                                      nlaIII
                                     sphI
               styI      tru9I       nspI                                                   pleI
       xcmI    bsaJI     mseI        nspHI      apoI                                        hinfI             apoI
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     sfuI
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     bsiCI               nspBII             tru9I     rsaI
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                                                                            xmnI
                                                                            tfiI
                                                                            hinfI                      sau96I
                                 tru9I                       pleI      tru9I                           avaII
      bsrI                  bsmAI mseI                       hinfI     mseI asp700                     asuI
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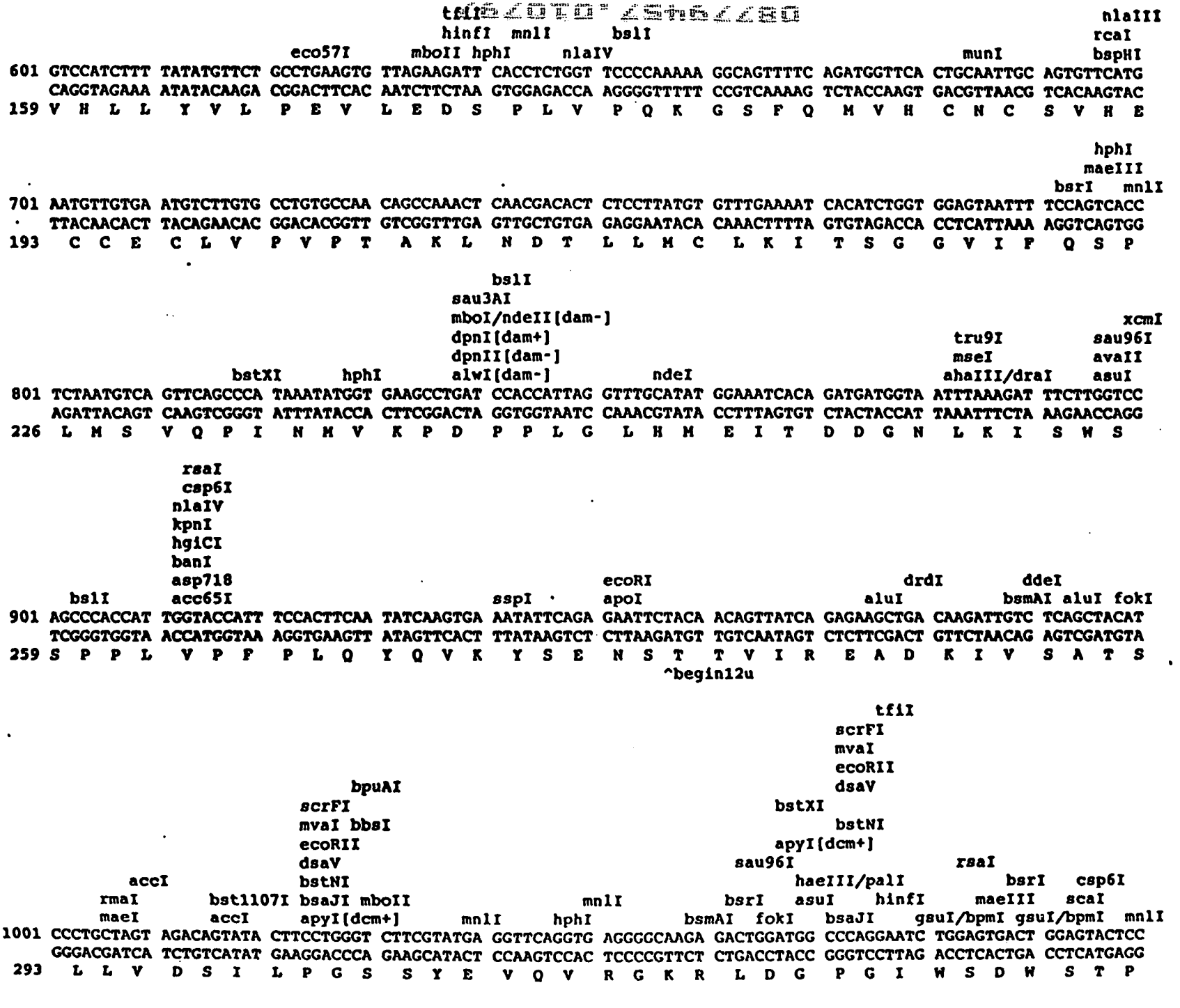
Figure 1A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csp6I
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hgiCI
banI
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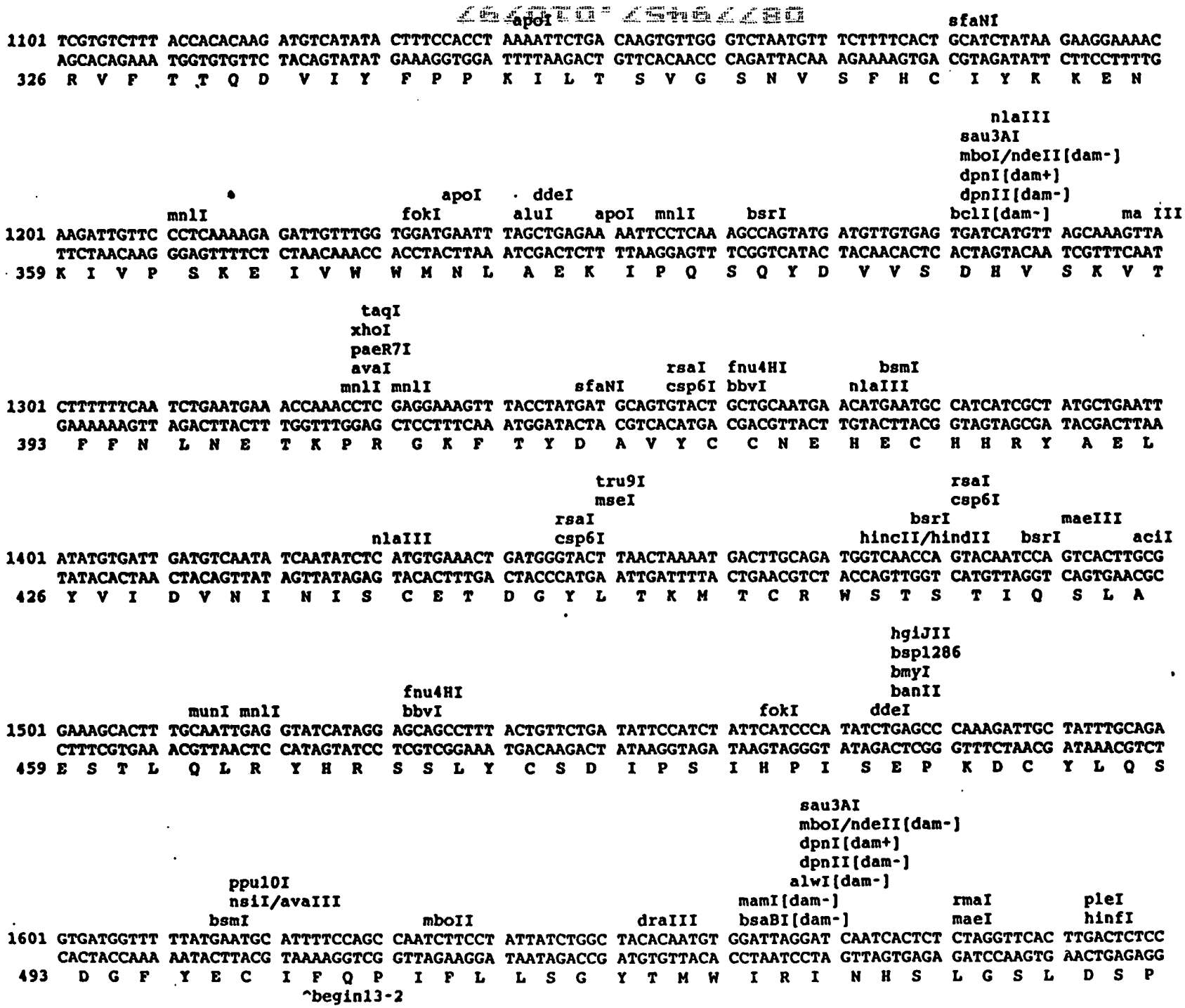
Figure 1B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xhoI
paeR7I
avaI
mnlI mnlI
rsaI fnu4HI bsmI
sfaNI csp6I bbvI nlaIII
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^begin13-2

Figure 1C

```
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         nspHI           tfiI                        fokI
         aflIII          hinfI    hphI          mnlI   bsrI
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                                              hinfI          tru9I           rsaI
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                     bsmAI bsrI                                      hhaI/cfoI mnlI maeI    bsrI
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                                                          sau96I
                                                          avaII
                                                          asuI
                                                         ppuMI                      tru9I
                                                 ecoNI   eco0109I/draII             mseI
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                                                                                 mscI/balI
                                                                                 haeI
                                                                                 eaeI
       mboII                  apoI                                    maeIII     cfrI          munI
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Figure 1D

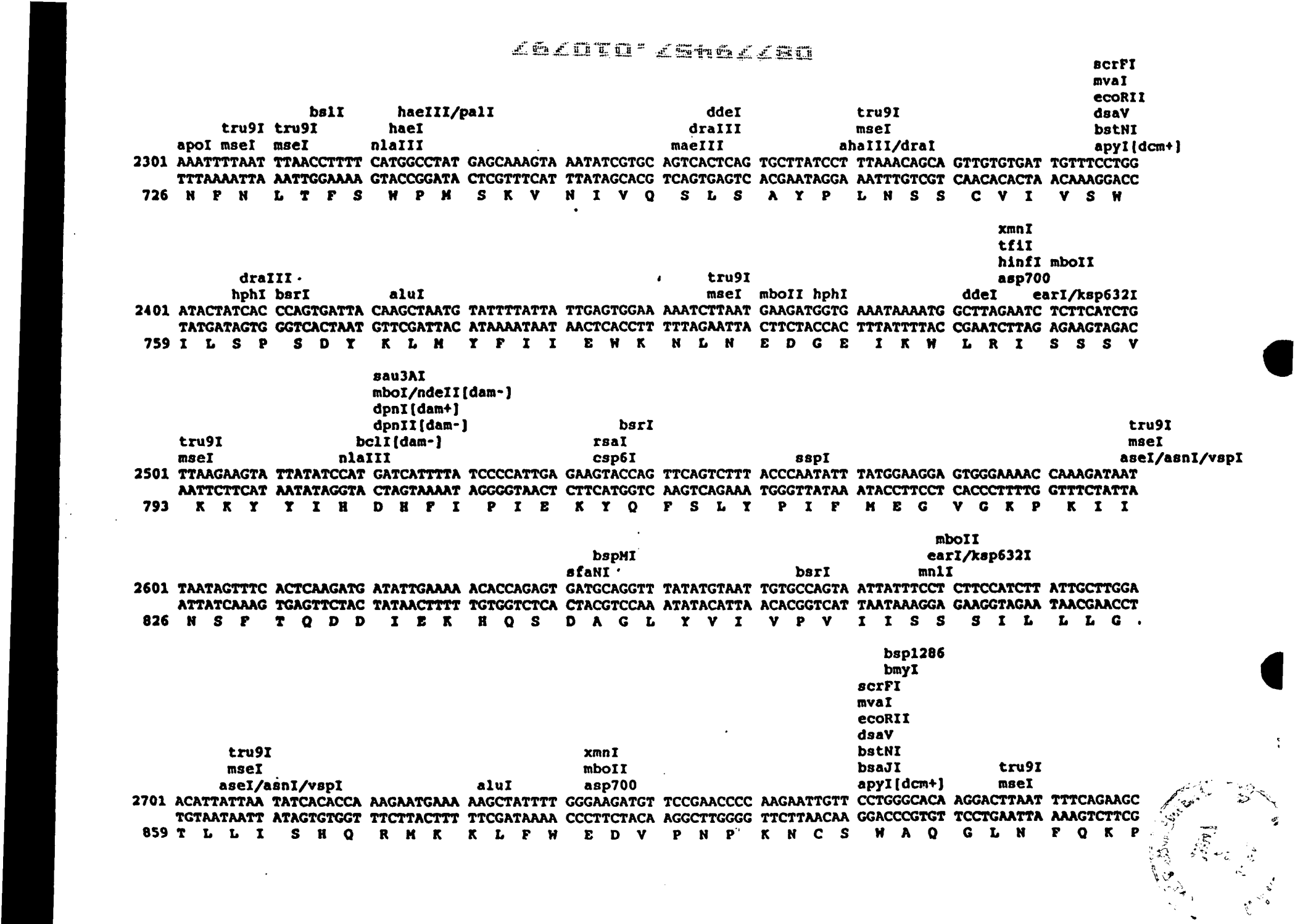
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Figure 1

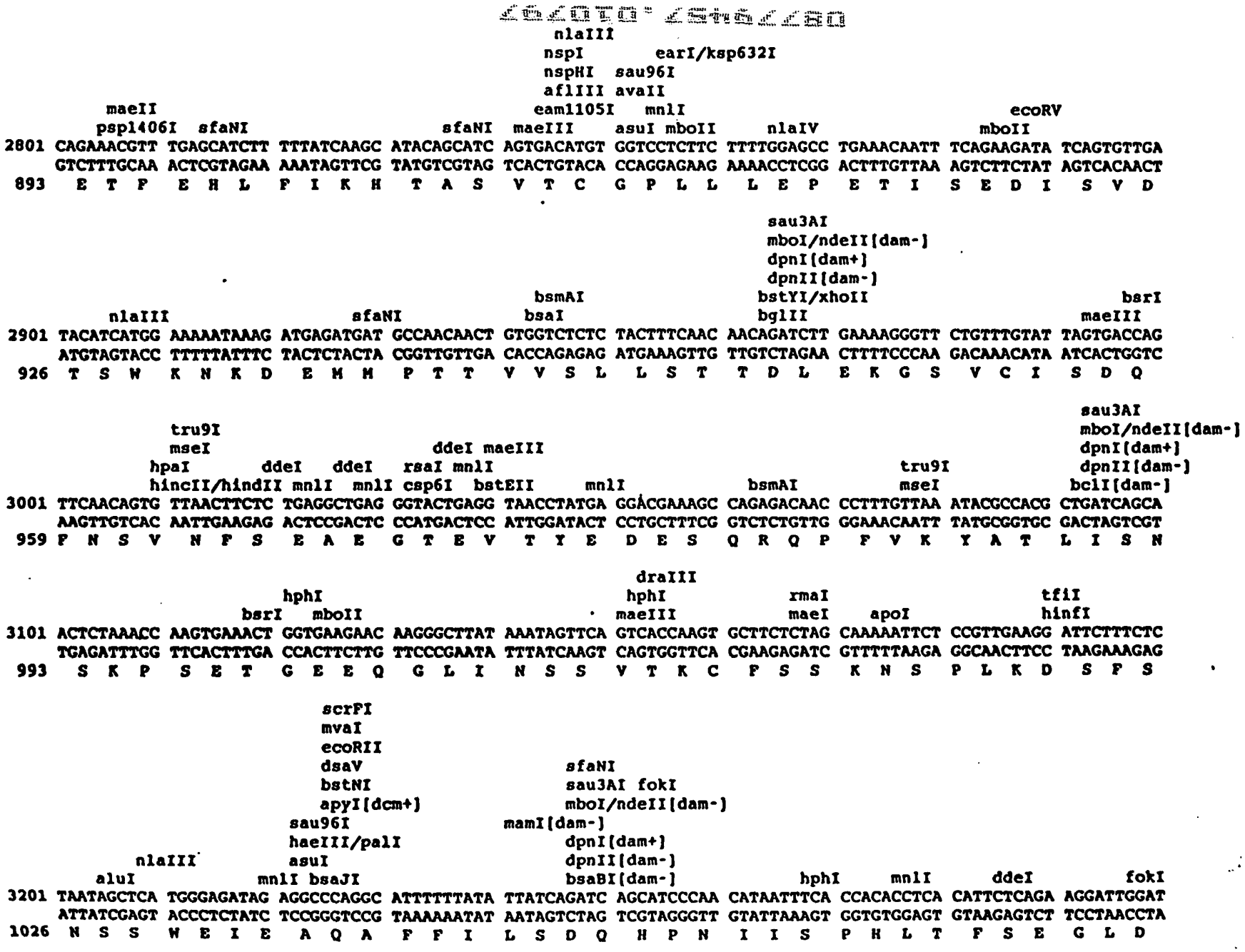
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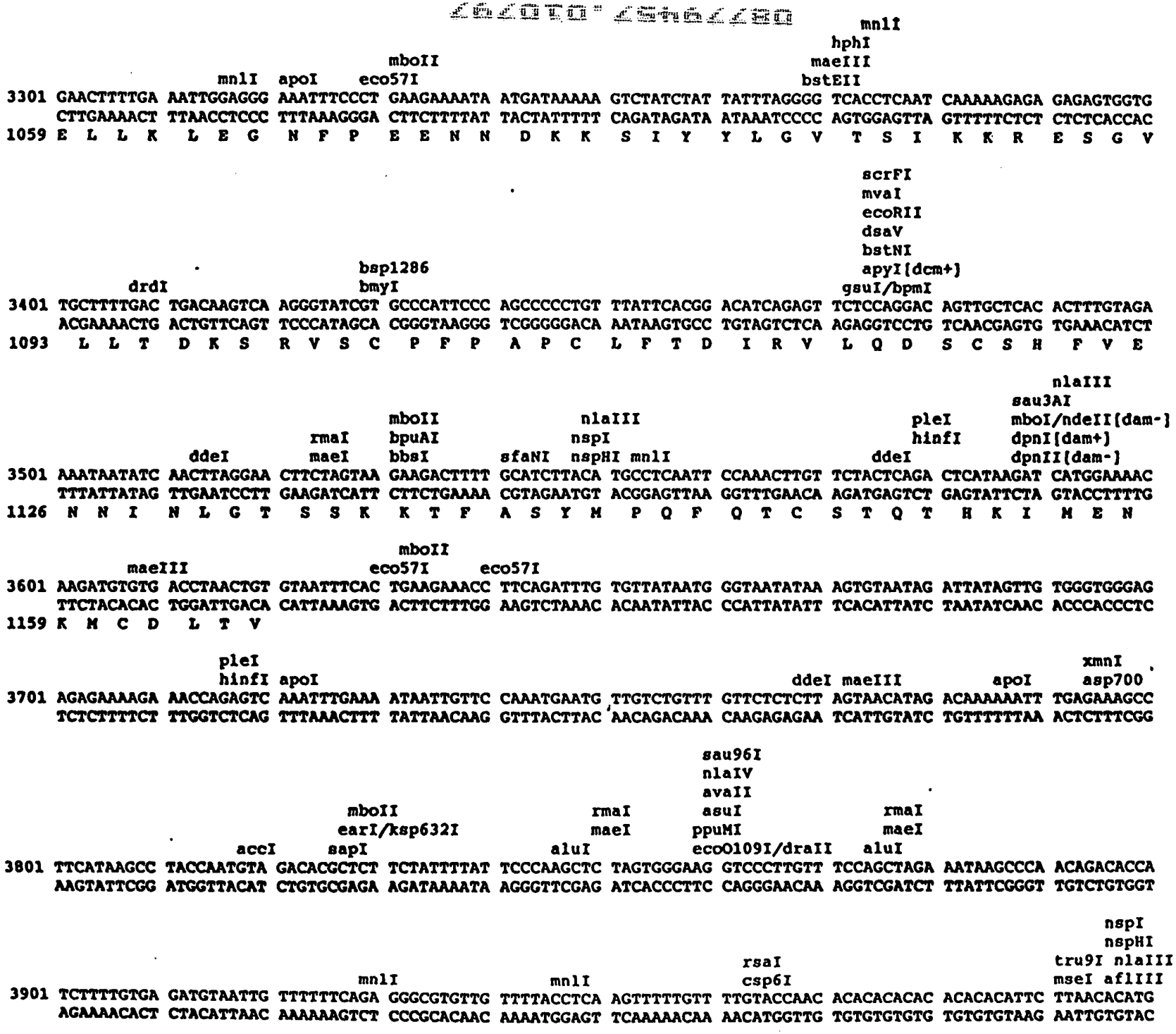
Figure 1F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ACGAAAACTG ACTGTTCAGT TCCCATAGCA CGGGTAAGGG TCGGGGGACA AATAAGTGCC TGTAGTCTCA AGAGGTCCTG TCAACGAGTG TGAAACATCT
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nlaIII
sau3AI
mboII
nlaIII
pleI
mboI/ndeII(dam-)
rmaI
bpuAI
nspI
hinfI
dpnI(dam+)
ddeI
maeI
bbsI
sfaNI nspHI mnlI
ddeI
dpnII(dam-)
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mboII
maeIII
eco57I
eco57I
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xmnI
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apoI
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nlaIV
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ppuMI
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accI
sapI
aluI
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nspHI
rsaI
tru9I nlaIII
mnlI
mnlI
csp6I
mseI aflIII
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Figure 1G

```
                                                                                                           sfuI
                                                                                                           bstBI
                                                                                                           bsiCI
                                                                                                           asuII
                                                                                             tru9I     ecoRI
                                                             scfI                            mseI      apoI
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4101 TC
     AG

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Figure 1H

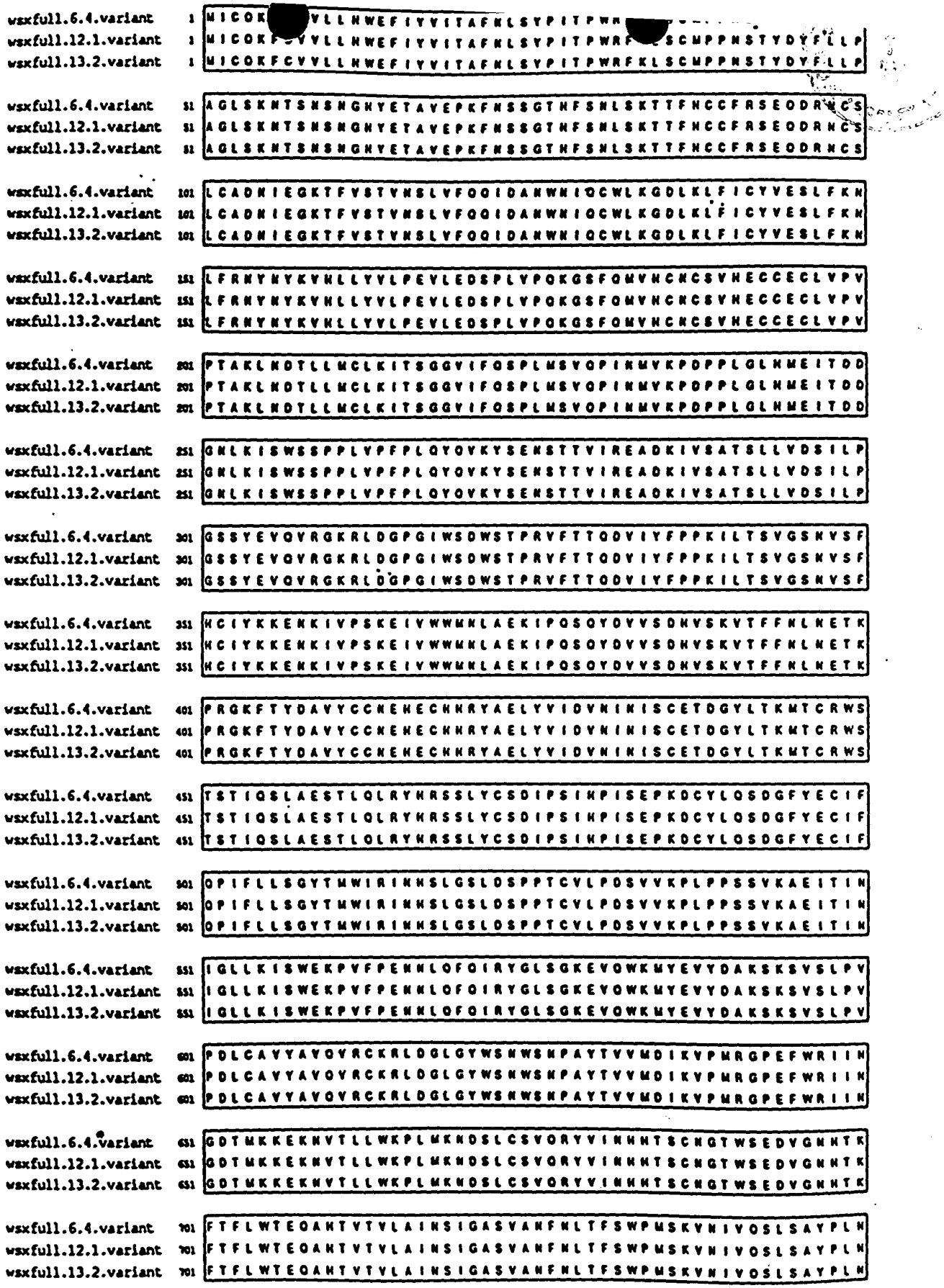
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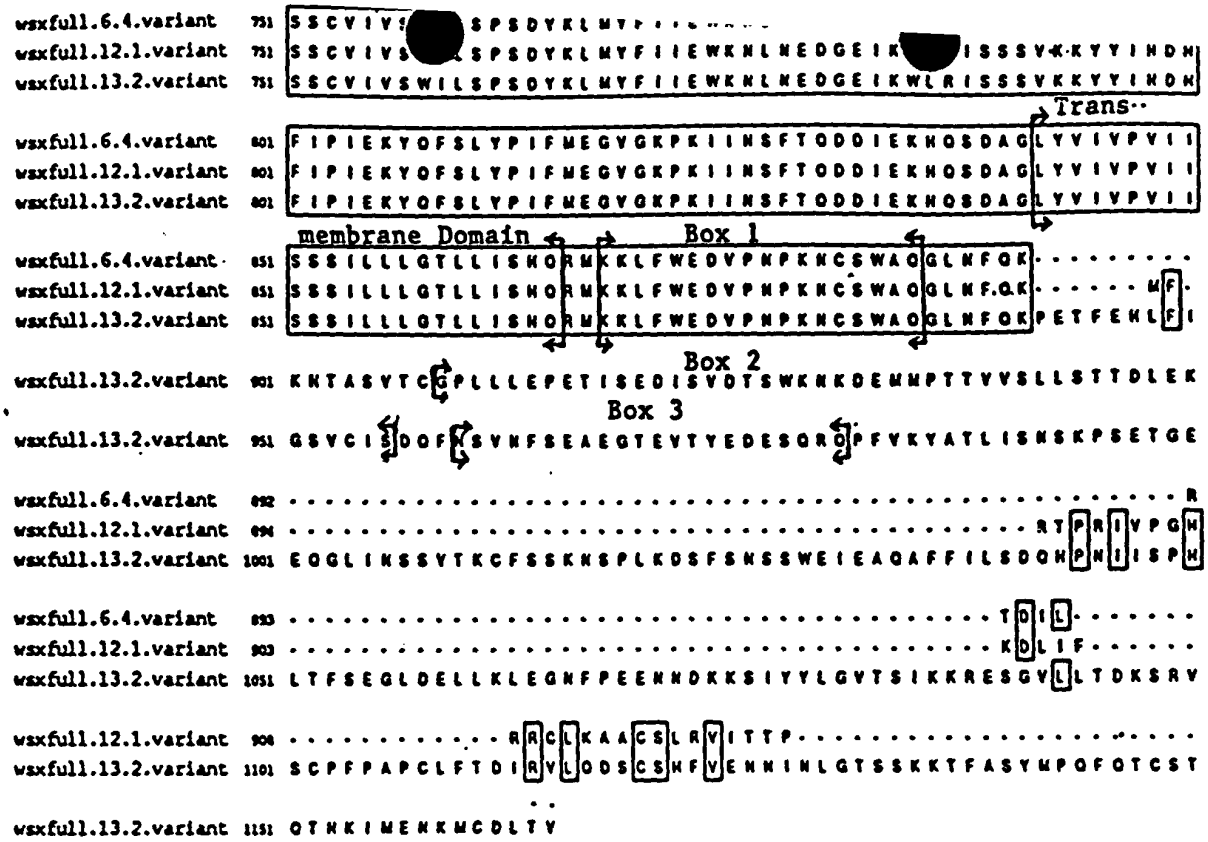
Figure 2A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Trans··
membrane Domain
Box 1
Box 2
Box 3

Figure 2B

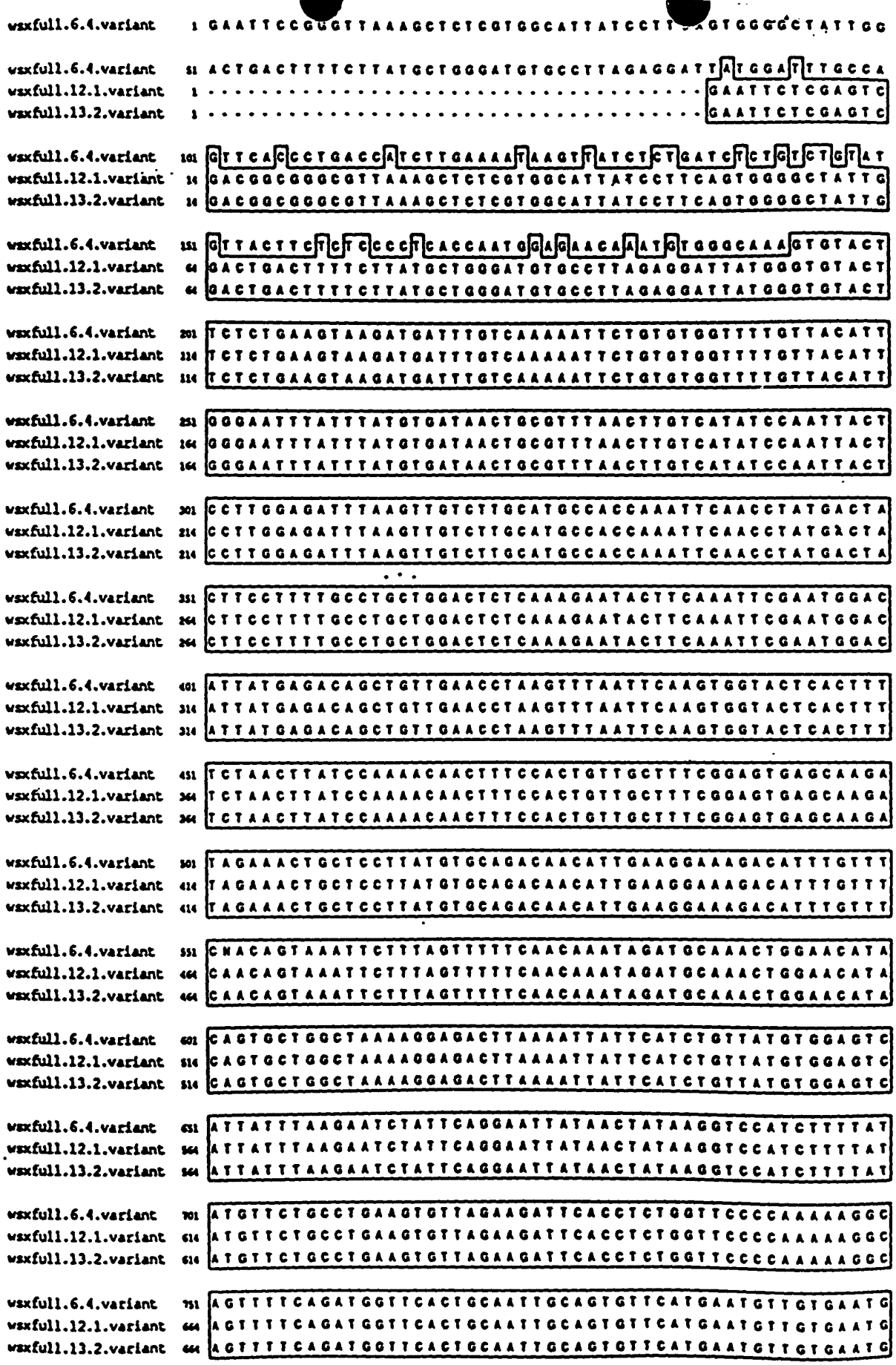
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Figure 3A

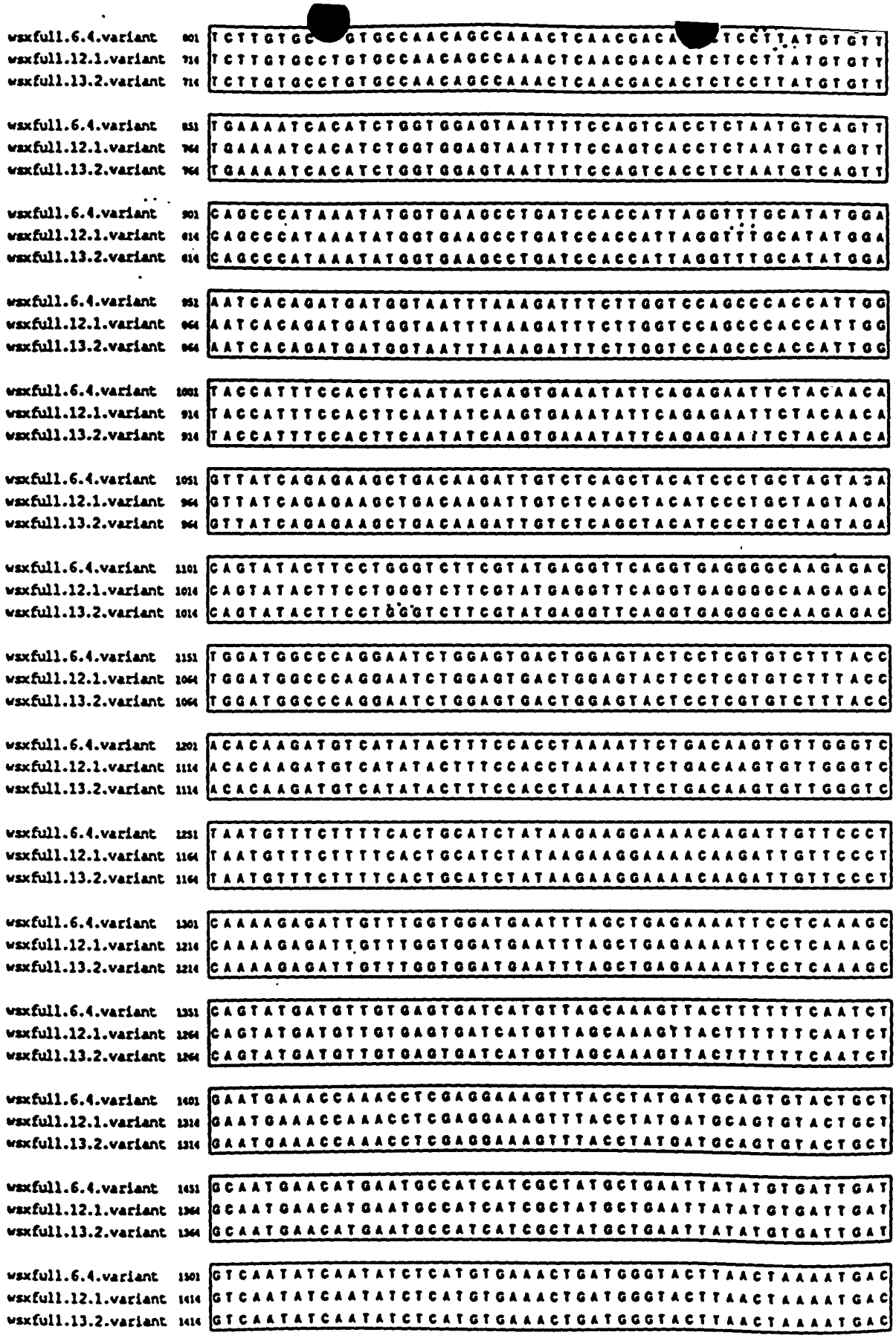
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Figure 3B

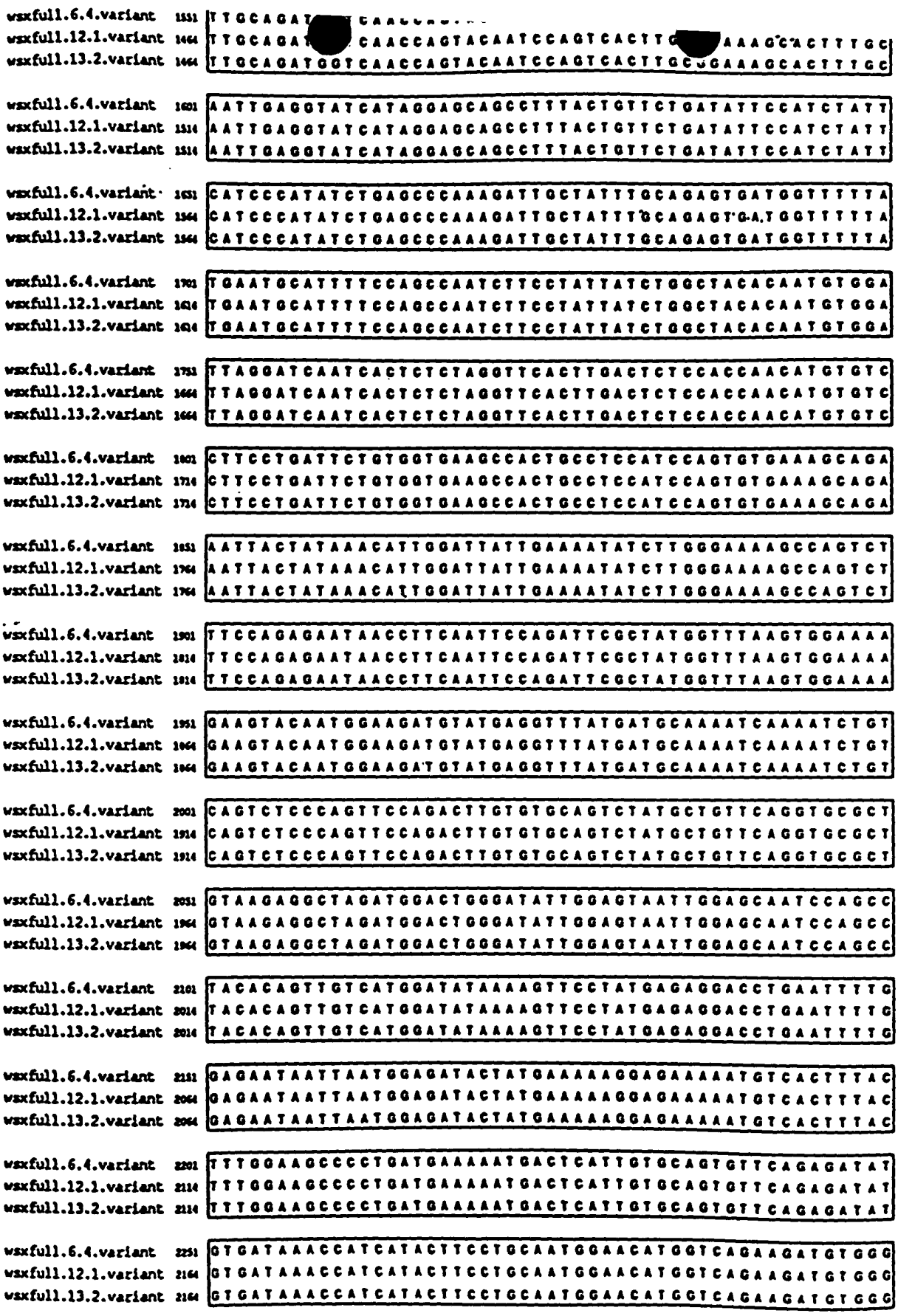
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Figure 3C

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Figure 3D

Figure 3E

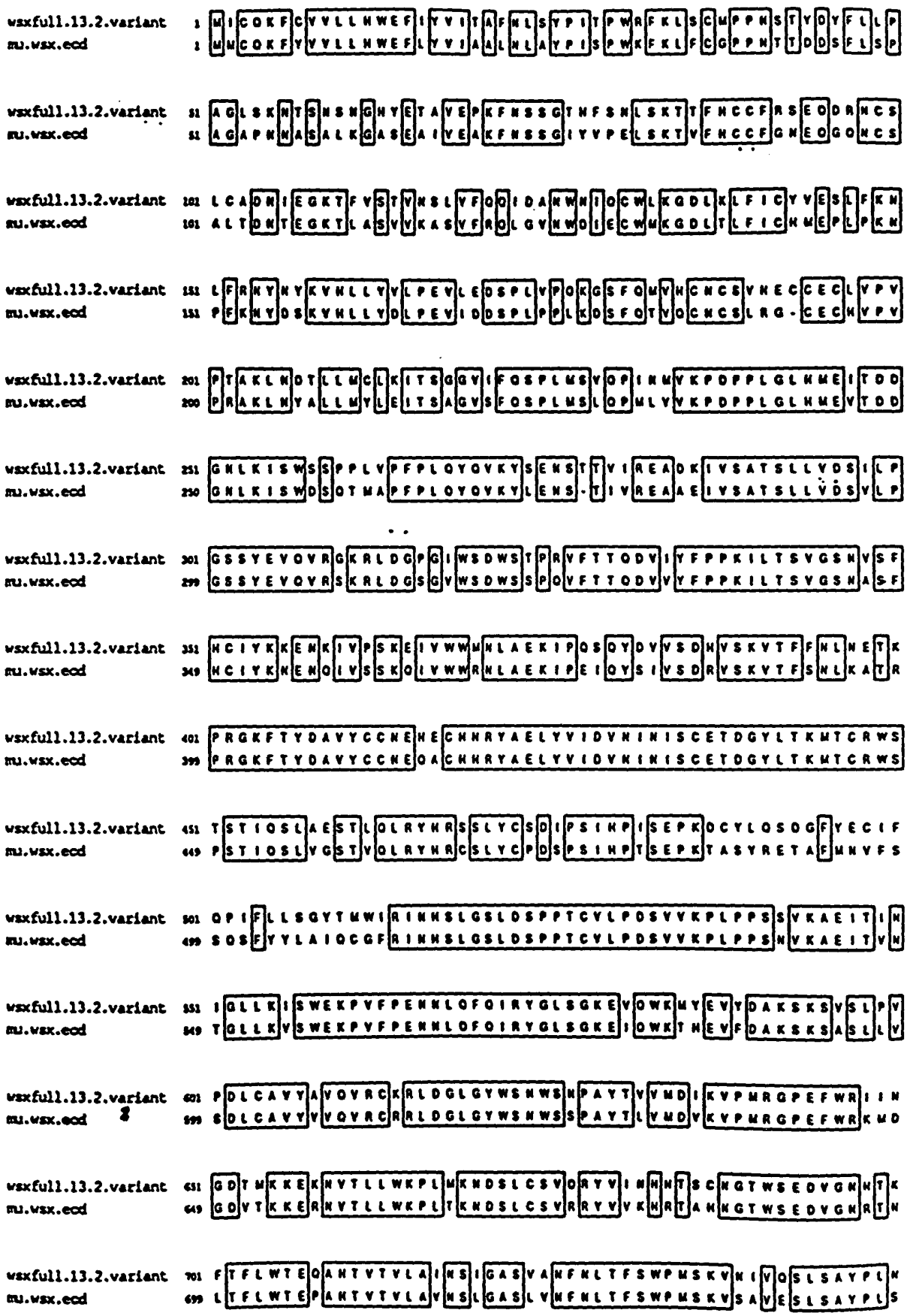

Figure 4A

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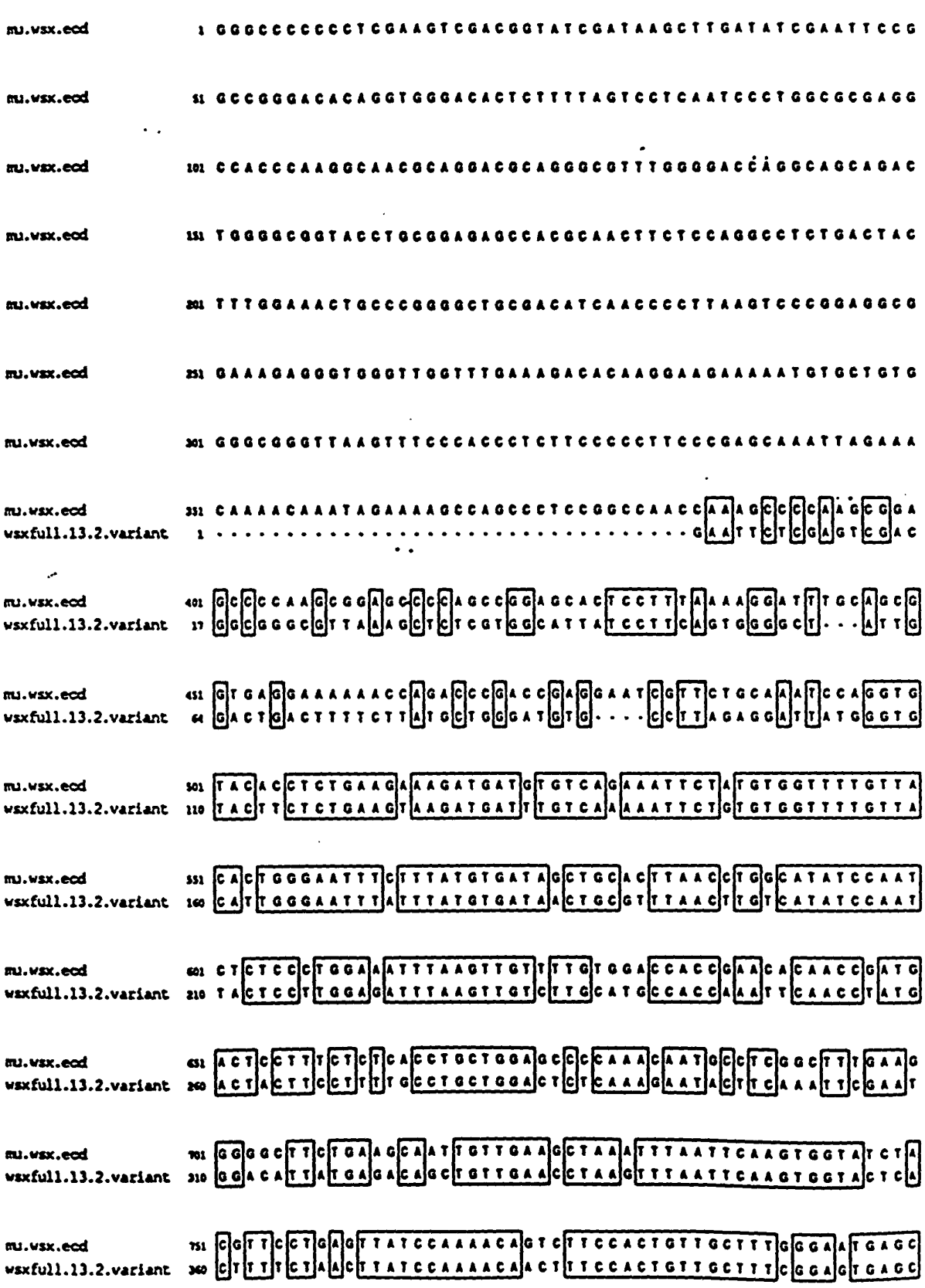
Figure 4B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wsxfull.13.2.variant 110 TACTTCTCTGAAGTAAGATGATTTGTCAAAAATTCTGTGTGGTTTTGTTA
mu.wsx.ecd 551 CACTGGGAATTTCTTTATGTGATAGCTGCACTTAACCTGGCATATCCAAT
wsxfull.13.2.variant 160 CATTGGGAATTTATTTATGTGATAACTGCGTTAACTTGTCATATCCAAT
mu.wsx.ecd 601 CTCTCCCTGGAAATTTAAGTTGTTTTGTGGACCACCGAACACAACCGATG
wsxfull.13.2.variant 210 TACTCCTTGGAGATTTAAGTTGTCTTGCATGCCACCAATTCAACCTATG
mu.wsx.ecd 651 ACTCCTTTCTCTCACCTGCTGGAGCCCCAAACAATGCCTCGGCTTTGAAG
wsxfull.13.2.variant 260 ACTACTTCCTTTGCCTGCTGGACTCTCAAAGAATACTTCAAATTCGAAT
mu.wsx.ecd 701 GGGGCTTCTGAAGCAATTGTTGAAGCTAAATTTAATTCAAGTGGTATCTA
wsxfull.13.2.variant 310 GGACATTATGAGACAGCTGTTGAACCTAAGTTTAATTCAAGTGGTACTCA
mu.wsx.ecd 751 CGTTCCTGAGTTATCCAAAACAGTCTTCCACTGTTGCTTTGGGAATGAGC
wsxfull.13.2.variant 360 CTTTTCTAACTTATCCAAAACACTTTCCACTGTTGCTTTCGGAGTGAGC

Figure 5A

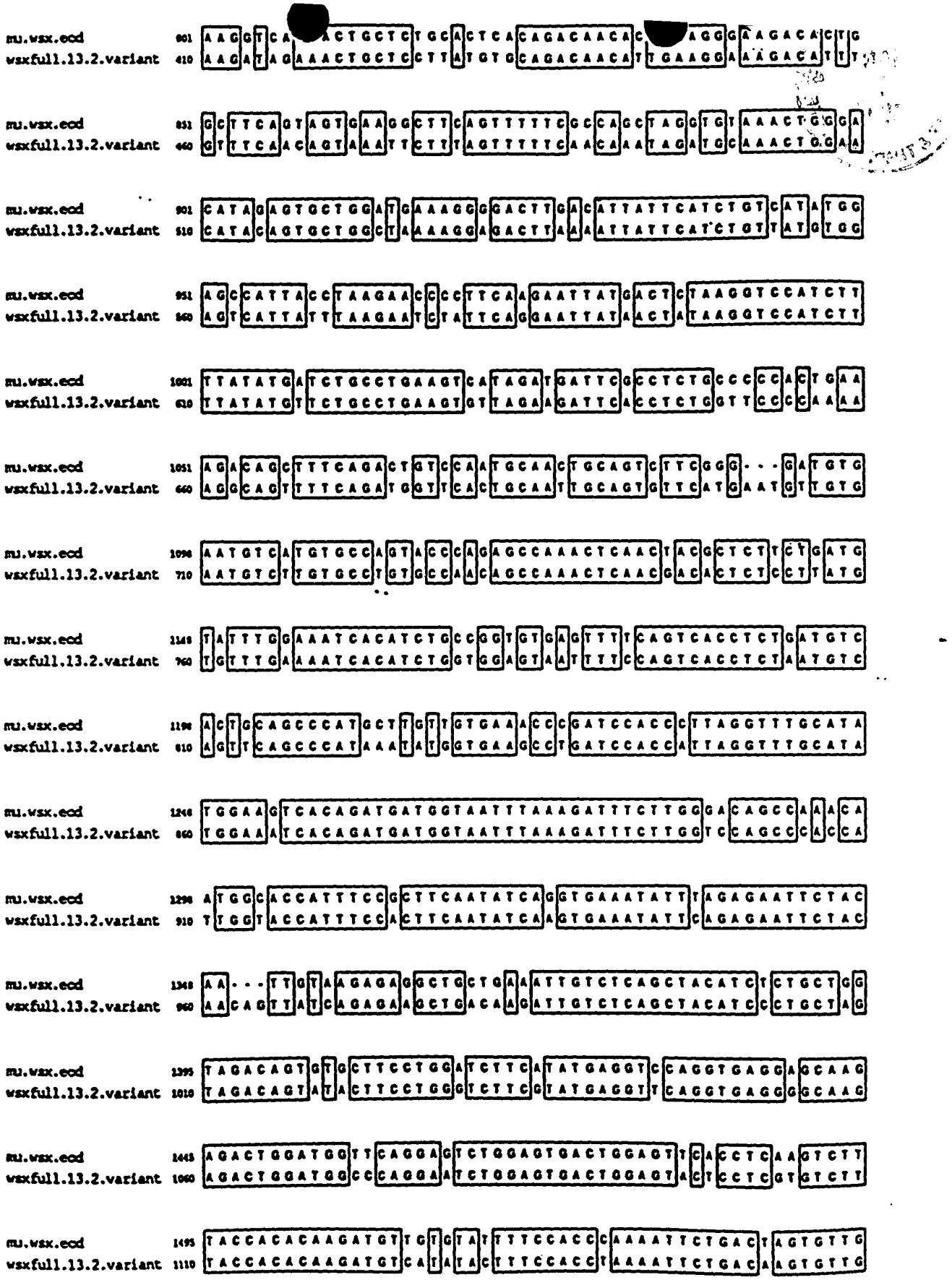


Figure 5B

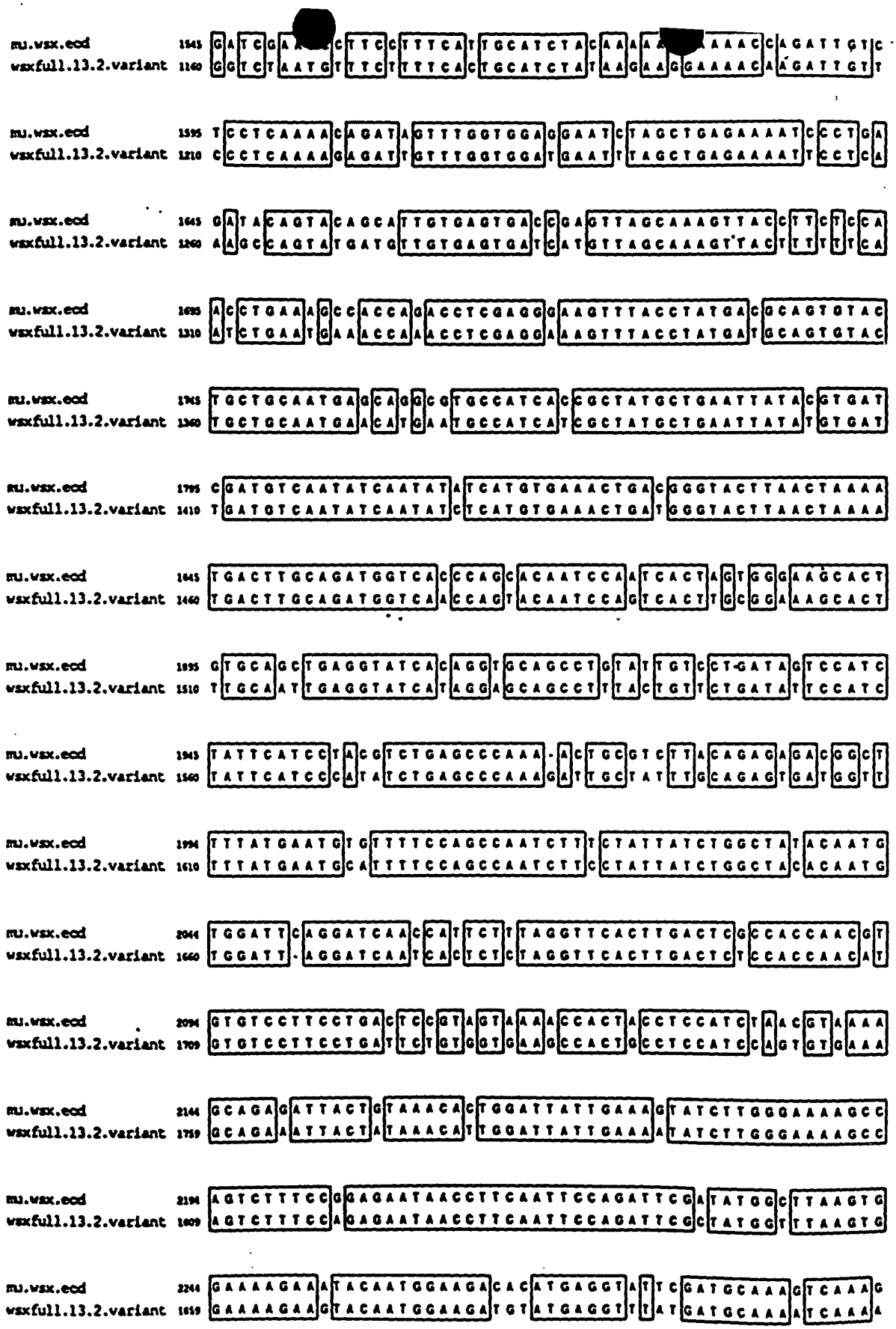

mu.vsx.eod 1545
vsxfull.13.2.variant 1160
mu.vsx.eod 1595
vsxfull.13.2.variant 1210
mu.vsx.eod 1645
vsxfull.13.2.variant 1260
mu.vsx.eod 1695
vsxfull.13.2.variant 1310
mu.vsx.eod 1745
vsxfull.13.2.variant 1360
mu.vsx.eod 1795
vsxfull.13.2.variant 1410
mu.vsx.eod 1845
vsxfull.13.2.variant 1460
mu.vsx.eod 1895
vsxfull.13.2.variant 1510
mu.vsx.eod 1945
vsxfull.13.2.variant 1560
mu.vsx.eod 1994
vsxfull.13.2.variant 1610
mu.vsx.eod 2044
vsxfull.13.2.variant 1660
mu.vsx.eod 2094
vsxfull.13.2.variant 1709
mu.vsx.eod 2144
vsxfull.13.2.variant 1759
mu.vsx.eod 2194
vsxfull.13.2.variant 1809
mu.vsx.eod 2244
vsxfull.13.2.variant 1859

Figure 5C

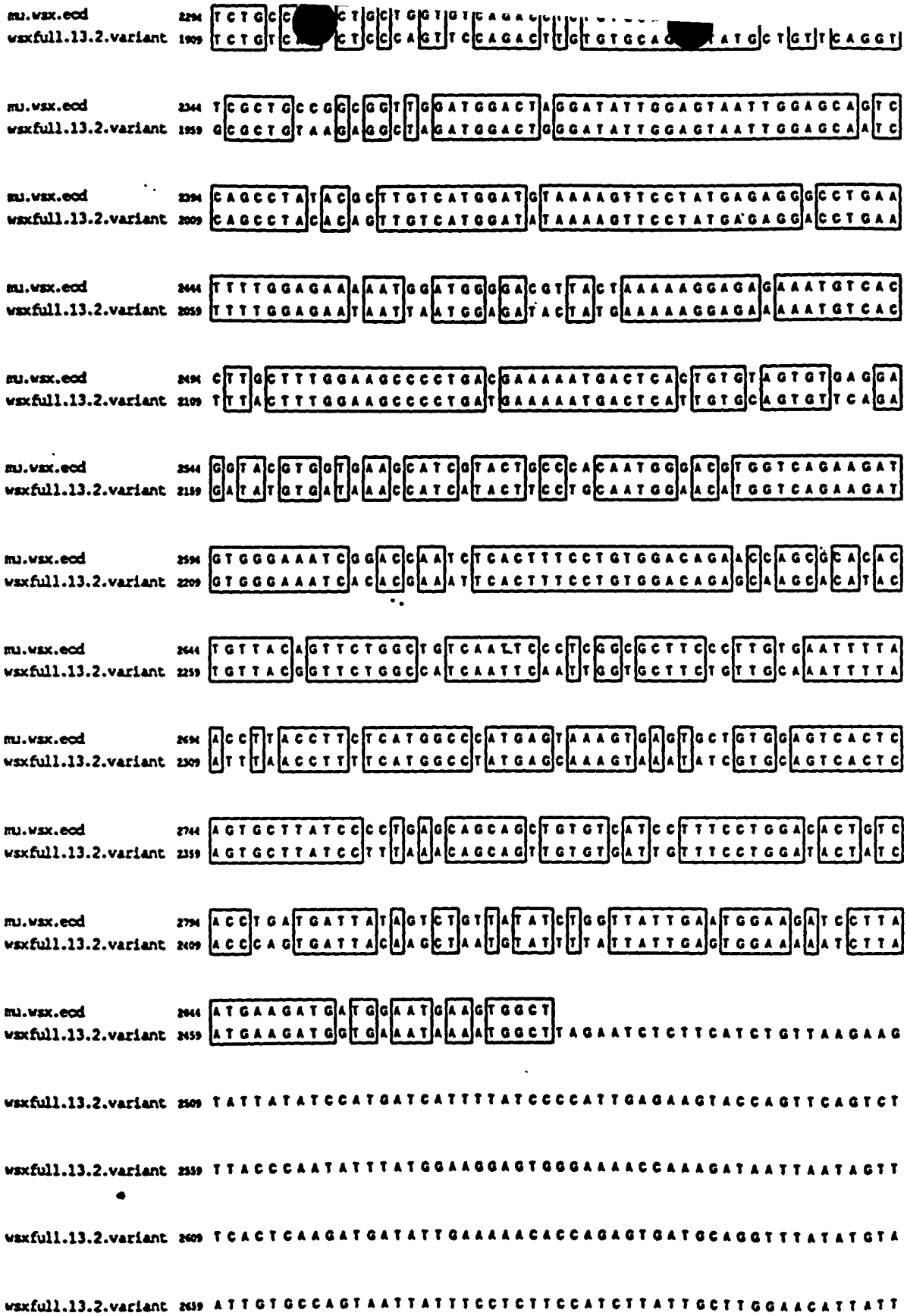

mu.wsx.eod
wsxfull.13.2.variant
wsxfull.13.2.variant
wsxfull.13.2.variant
wsxfull.13.2.variant

Figure 5D

wsxfull.13.2.variant 2709 AATATC[redacted]CCAAAGAATGAAAAAGCTATTTTC[redacted]

wsxfull.13.2.variant 2759 CCAAGAATTGTTCCTGGGCACAAGGACTTAATTTTCAGAAGCCAGAAACG

wsxfull.13.2.variant 2809 TTTGAGCATCTTTTTATCAAGCATACAGCATCAGTGACATGTGGTCCTCT

wsxfull.13.2.variant 2859 TCTTTTGGAGCCTGAAACAATTTCAGAAGATATCAGTGTTGATACATCAT

wsxfull.13.2.variant 2909 GGAAAAATAAAGATGAGATGATGCCAACAACTGTGGTCTCTCTACTTTCA

wsxfull.13.2.variant 2959 ACAACAGATCTTGAAAAGGGTTCTGTTTGTATTAGTGACCAGTTCAACAG

wsxfull.13.2.variant 3009 TGTTAACTTCTCTGAGGCTGAGGGTACTGAGGTAACCTATGAGGACGAAA

wsxfull.13.2.variant 3059 GCCAGAGACAACCCTTTGTTAAATACGCCACGCTGATCAGCAACTCTAAA

wsxfull.13.2.variant 3109 CCAAGTGAAACTGGTGAAGAACAAGGGCTTATAAATAGTTCAGTCACCAA

wsxfull.13.2.variant 3159 GTGCTTCTCTAGCAAAAATTCTCCGTTGAAGGATTCTTTCTCTAATAGCT

wsxfull.13.2.variant 3209 CATGGGAGATAGAGGCCCAGGCATTTTTTATATTATCAGATCAGCATCCC

wsxfull.13.2.variant 3259 AACATAATTTCACCACACCTCACATTCTCAGAAGGATTGGATGAACTTTT

wsxfull.13.2.variant 3309 GAAATTGGAGGGAAATTTCCCTGAAGAAAATAATGATAAAAAGTCTATCT

wsxfull.13.2.variant 3359 ATTATTTAGGGGTCACCTCAATCAAAAAGAGAGAGAGTGGTGTGCTTTTG

wsxfull.13.2.variant 3409 ACTGACAAGTCAAGGGTATCGTGCCCATTCCCAGCCCCCTGTTTATTCAC

wsxfull.13.2.variant 3459 GGACATCAGAGTTCTCCAGGACAGTTGCTCACACTTTGTAGAAAATAATA

wsxfull.13.2.variant 3509 TCAACTTAGGAACTTCTAGTAAGAAGACTTTTGCATCTTACATGCCTCAA

wsxfull.13.2.variant 3559 TTCCAAACTTGTTCTACTCAGACTCATAAGATCATGGAAAACAAGATGTG

wsxfull.13.2.variant 3609 TGACCTAACTGTGTAATTTCACTGAAGAAACCTTCAGATTTGTGTTATAA

wsxfull.13.2.variant 3659 TGGGTAATATAAAGTGTAATAGATTATAGTTGTGGGTGGGAGAGAGAAAA

Figure 5E

wsxfull.13.2.variant 3709 GAAACCA[redacted]TCAAATTTGAAAATAATT[redacted]

wsxfull.13.2.variant 3759 TTGTTCTCTCTTAGTAACATAGACAAAAAATTTGAGAAAGCCTTCATAAG

wsxfull.13.2.variant 3809 CCTACCAATGTAGACACGCTCTTCTATTTTATTCCCAAGCTCTAGTGGGA

wsxfull.13.2.variant 3859 AGGTCCCTTGTTTCCAGCTAGAAATAAGCCCAACAGACACATCATCTTTTGT

wsxfull.13.2.variant 3909 GAGATGTAATTGTTTTTTCAGAGGGCGTGTTGTTTTACCTCAAGTTTTTG

wsxfull.13.2.variant 3959 TTTTGTACCAACACACACACACACACACACATTCTTAACACATGTCCTTGTG

wsxfull.13.2.variant 4009 TGTTTTGAGAGTATATTATGTATTTATATTTTGTGCTATCAGACTGTAGG

wsxfull.13.2.variant 4059 ATTTGAAGTAGGACTTTCCTAAATGTTTAAGATAAACAGAATTC

Figure 5F

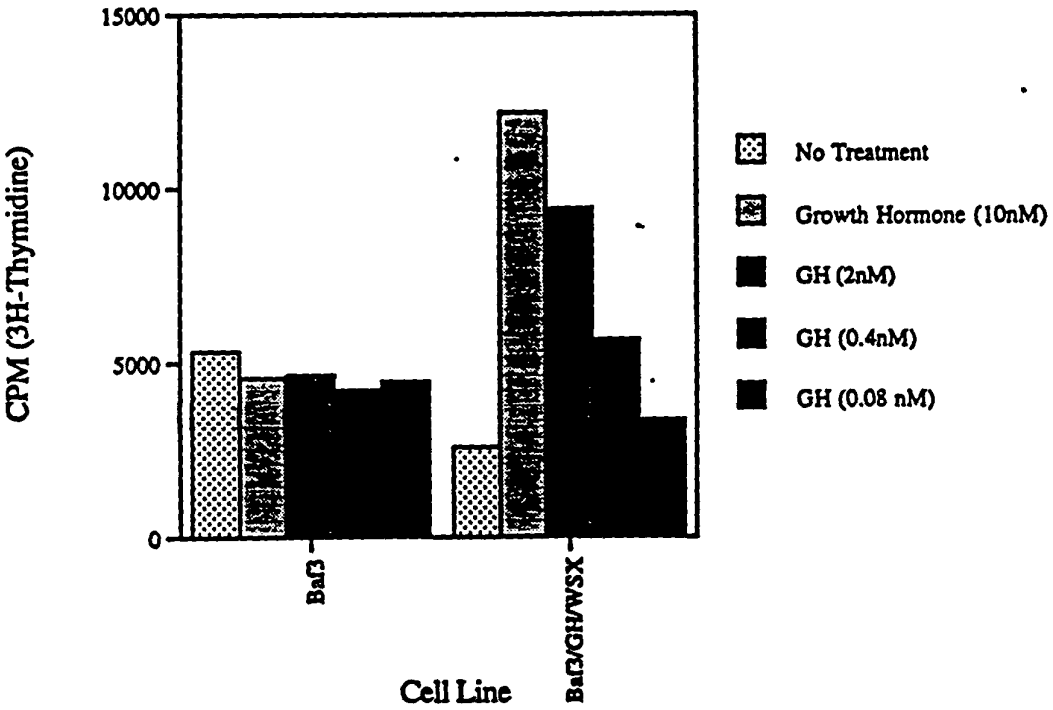

15000
10000
5000
0
CPM (3H-Thymidine)
Baf3
Baf3/GH/WSX
Cell Line
No Treatment
Growth Hormone (10nM)
GH (2nM)
GH (0.4nM)
GH (0.08 nM)

Figure 6

Murine			
-213	Sense:	GGGTTAAGTTTCCCACCC	(SEQ ID NO:9)
	Antisense:	GGGTGGGAAACTTAACCC	(SEQ ID NO:10)
	Scrambled:	AGGATACAGTGGGATCCC	(SEQ ID NO:11)
-99	Sense:	GCCCGAGCACTCCTTTAA	(SEQ ID NO:12)
	Antisens :	TTAAAGGAGTGCTCCCGC	(SEQ ID NO:13)
	Scrambled:	GAGCGGCCCTGTTAGATA	(SEQ ID NO:14)
-20	Sense:	GTATACACCTCTGAAGAA	(SEQ ID NO:15)
	Antisense:	TTCTTCAGAGGTGTACAC	(SEQ ID NO:16)
	Scrambled:	ATGCGAGGCTACTTCTAT	(SEQ ID NO:17)
+84	Sense:	CTCTCCCTGGAAATTTAA	(SEQ ID NO:18)
	Antisense:	TTAAATTTCCAGGGAGAG	(SEQ ID NO:19)
	Scrambled:	ATTTGAAGGAGTTAAGCC	(SEQ ID NO:20)
+211	Sense:	AATTTAATTCAAGTGGTA	(SEQ ID NO:21)
	Antisense:	TACCAGTTGAATTAAATT	(SEQ ID NO:22)
	Scrambled:	GTATCACTTCATAATATA	(SEQ ID NO:23)
Human			
5L	Sense:	GATGGTCAGGGTGAACTG	(SEQ ID NO:24)
	Antisense:	CAGTTCACCCTGACCATC	(SEQ ID NO:25)
	Scrambled:	GAGGCGAATGTGCGGATT	(SEQ ID NO:26)
+85	Sense:	CTTAAATCTCCAAGGAGT	(SEQ ID NO:27)
	Antisense:	ACTCCTTGGAGATTTAAG	(SEQ ID NO:28)
	Scrambled:	AAGTCTTAAGCCAGACTT	(SEQ ID NO:29)
-47	Sense:	TCTAAGGCACATCCCAGC	(SEQ ID NO:30)
	Antisense:	GCTGGGATGTGCCTTAGA	(SEQ ID NO:31)
	Scrambled:	CGCAATGAATTGACCCCC	(SEQ ID NO:32)
-20	Sense:	TACTTCAGAGAAGTACAC	(SEQ ID NO:33)
	Antisense:	GTGTACTTCTCTGAAGTA	(SEQ ID NO:34)
	Scrambled:	GAATCACGGTAACTATCA	(SEQ ID NO:35)
+185	Sense:	CAGCTGTCTCATAATGTC	(SEQ ID NO:36)
	Antisense:	GACATTATGAGACAGCTG	(SEQ ID NO:37)
	Scrambled:	TTCGTCAAGCCATCTGAT	(SEQ ID NO:38)

Figure 7

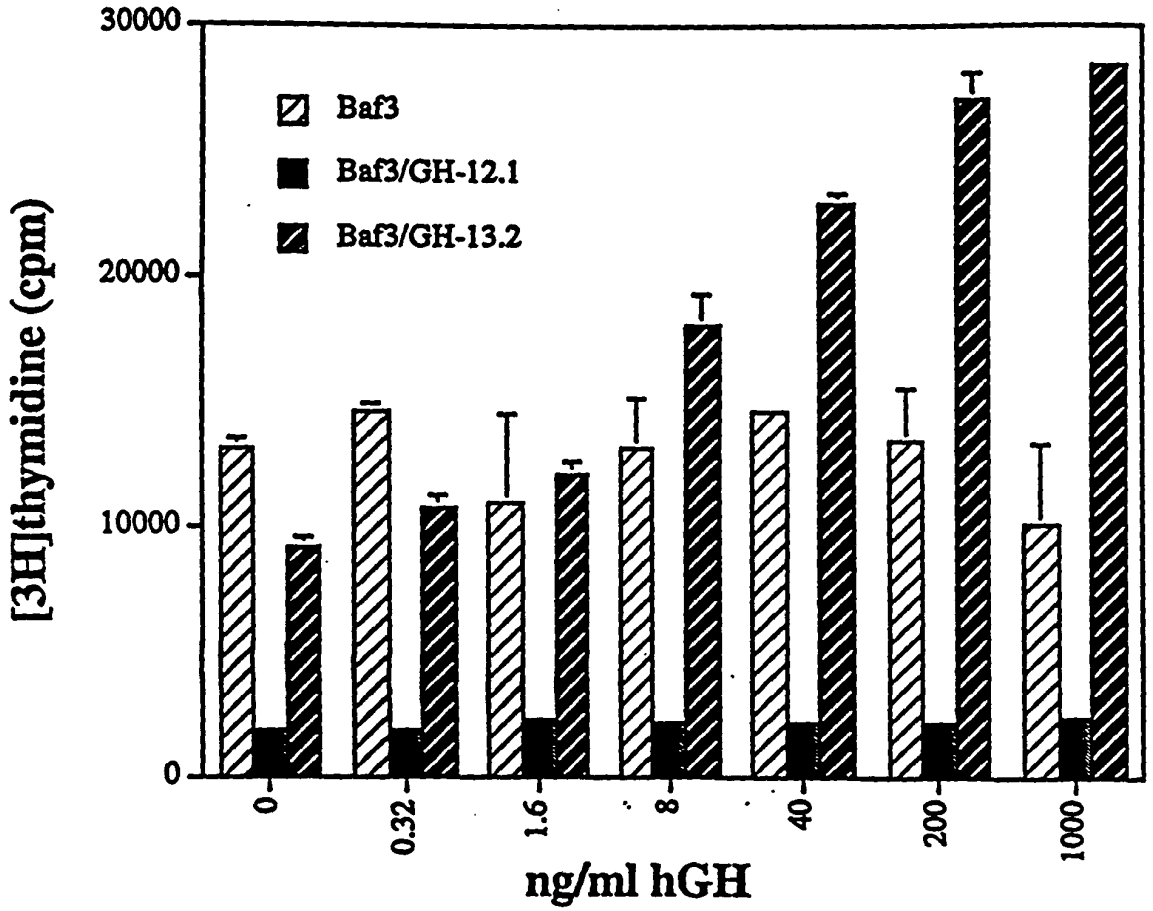

30000
20000
10000
0
[3H]thymidine (cpm)
Baf3
Baf3/GH-12.1
Baf3/GH-13.2
0
0.32
1.6
8
40
200
1000
ng/ml hGH

Figure 8

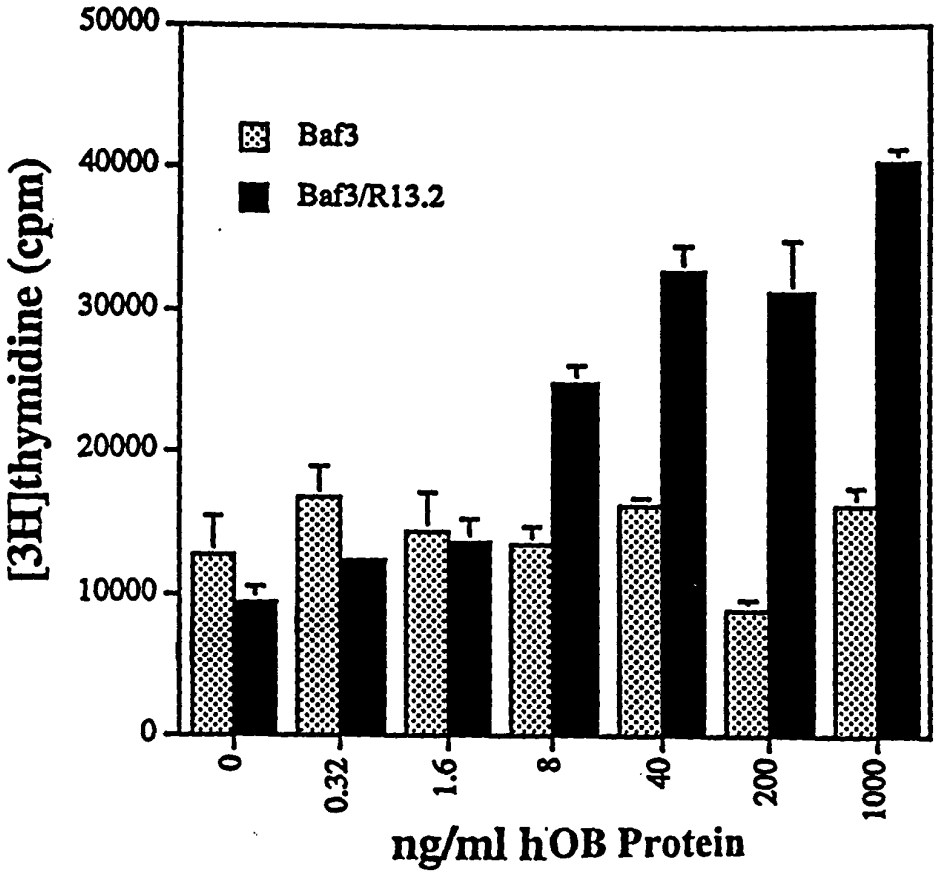

50000
40000
30000
20000
10000
0
[3H]thymidine (cpm)
Baf3
Baf3/R13.2
0
0.32
1.6
8
40
200
1000
ng/ml hOB Protein

Figure 9

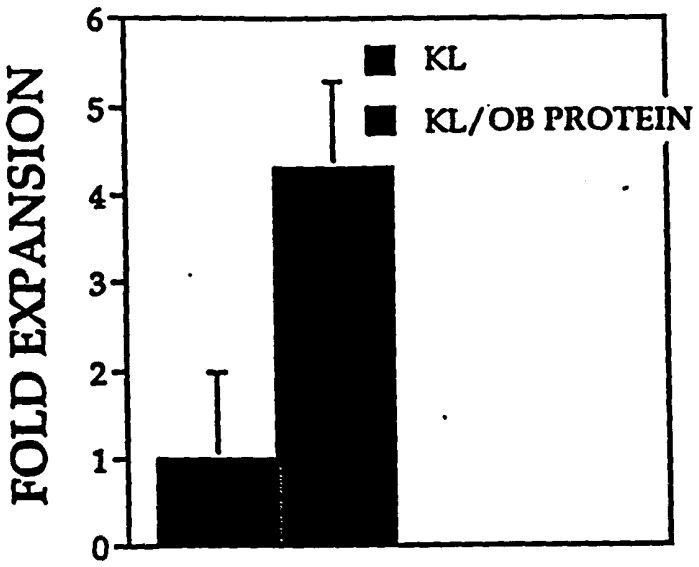


Figure 10A

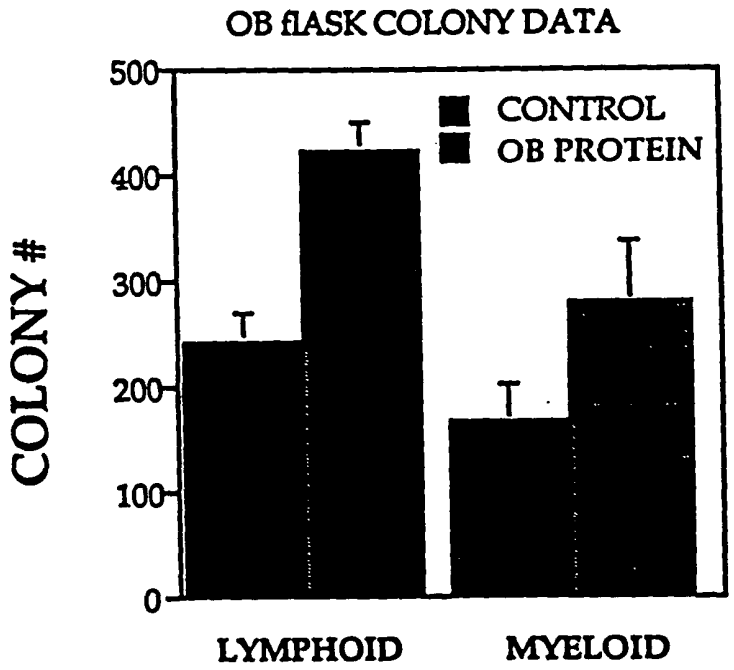


Figure 10B

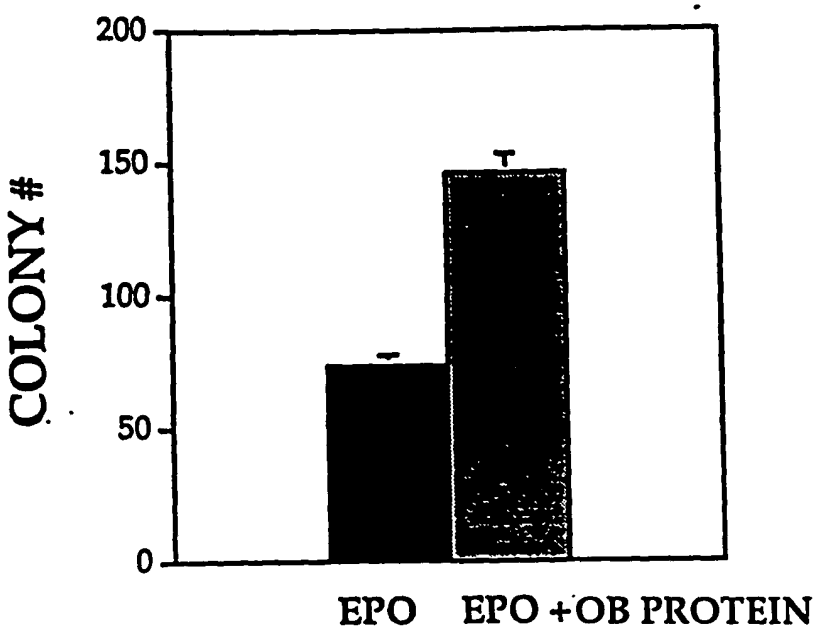


Figure 10C

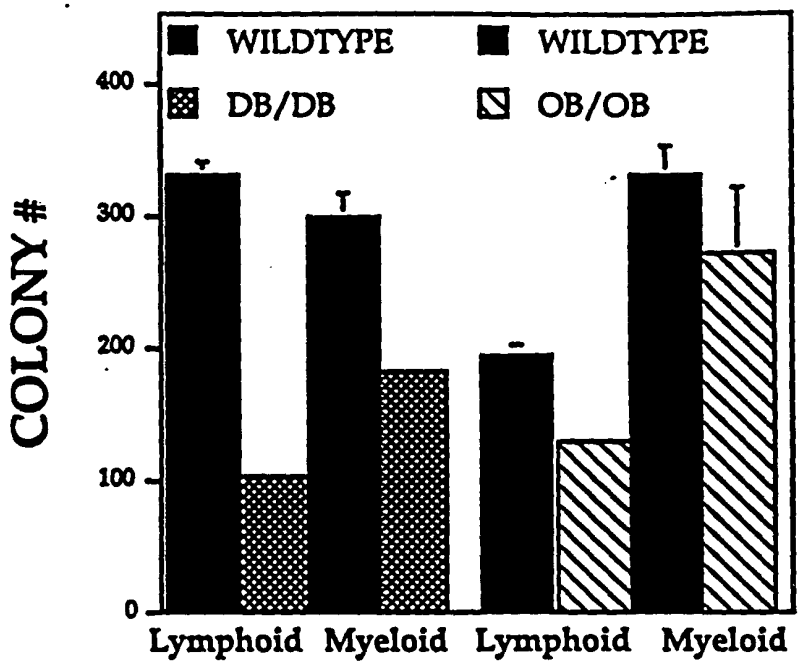

WILDTYPE
DB/DB
WILDTYPE
OB/OB
COLONY #
400
300
200
100
0
Lymphoid
Myeloid
Lymphoid
Myeloid

Figure 11

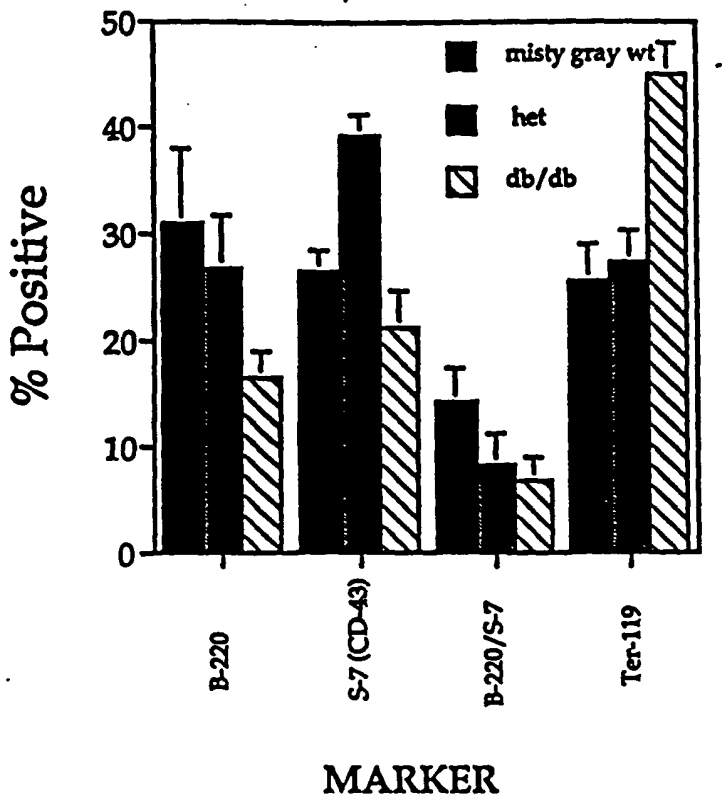

50
40
30
20
10
0
% Positive
misty gray wt
het
db/db
B-220
S-7 (CD-43)
B-220/S-7
Ter-119
MARKER

Figure 12A

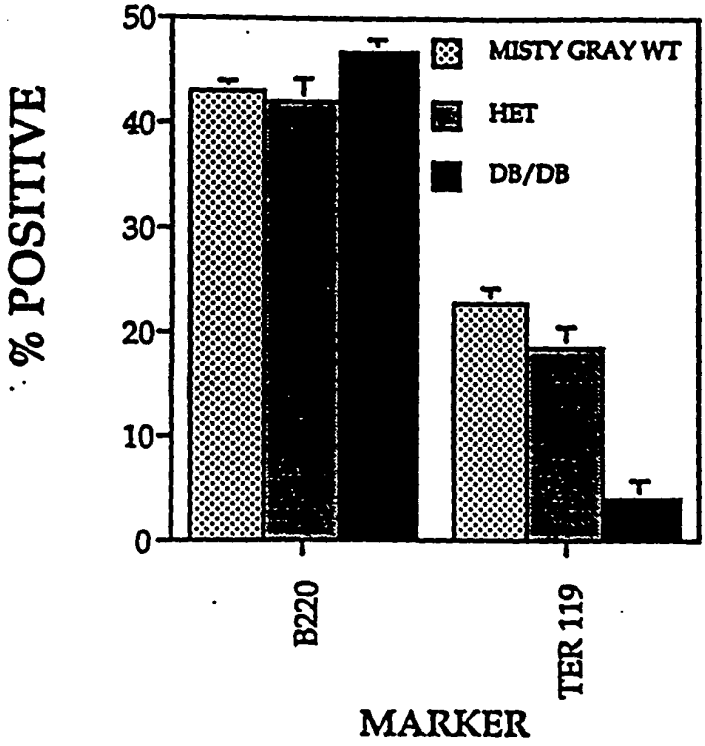

% POSITIVE
50
40
30
20
10
0
MISTY GRAY WT
HET
DB/DB
B220
TER 119
MARKER

Figure 12B

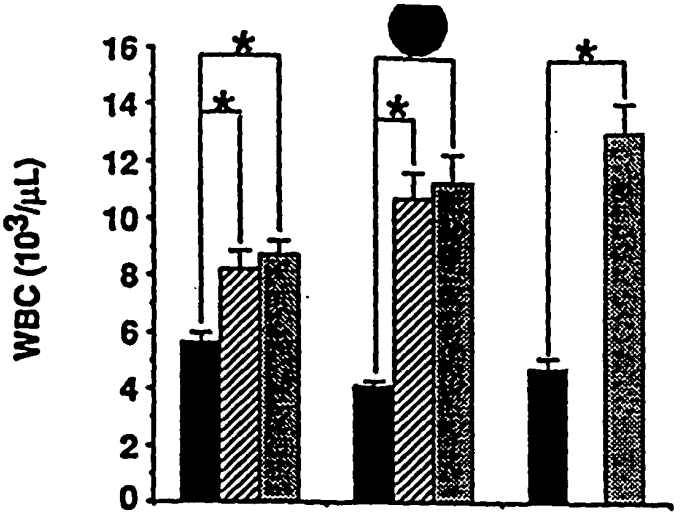
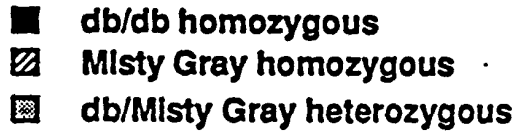


Figure 13A



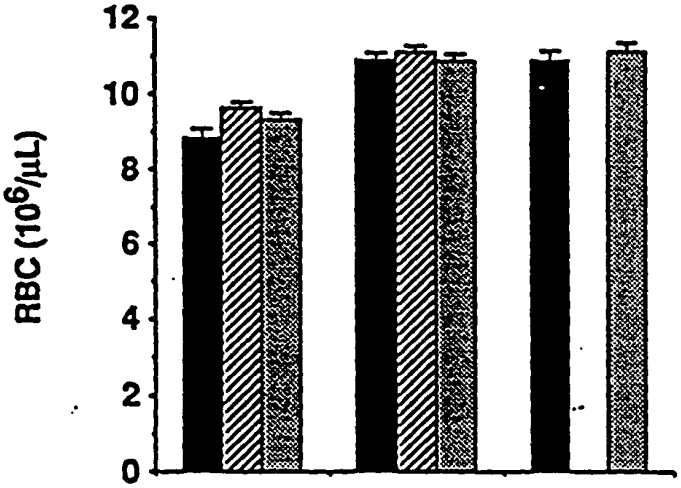


Figure 13B

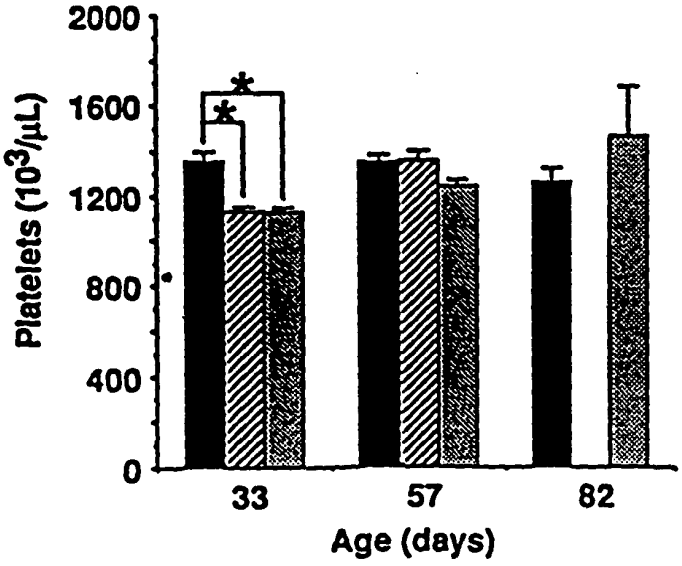


Figure 13C

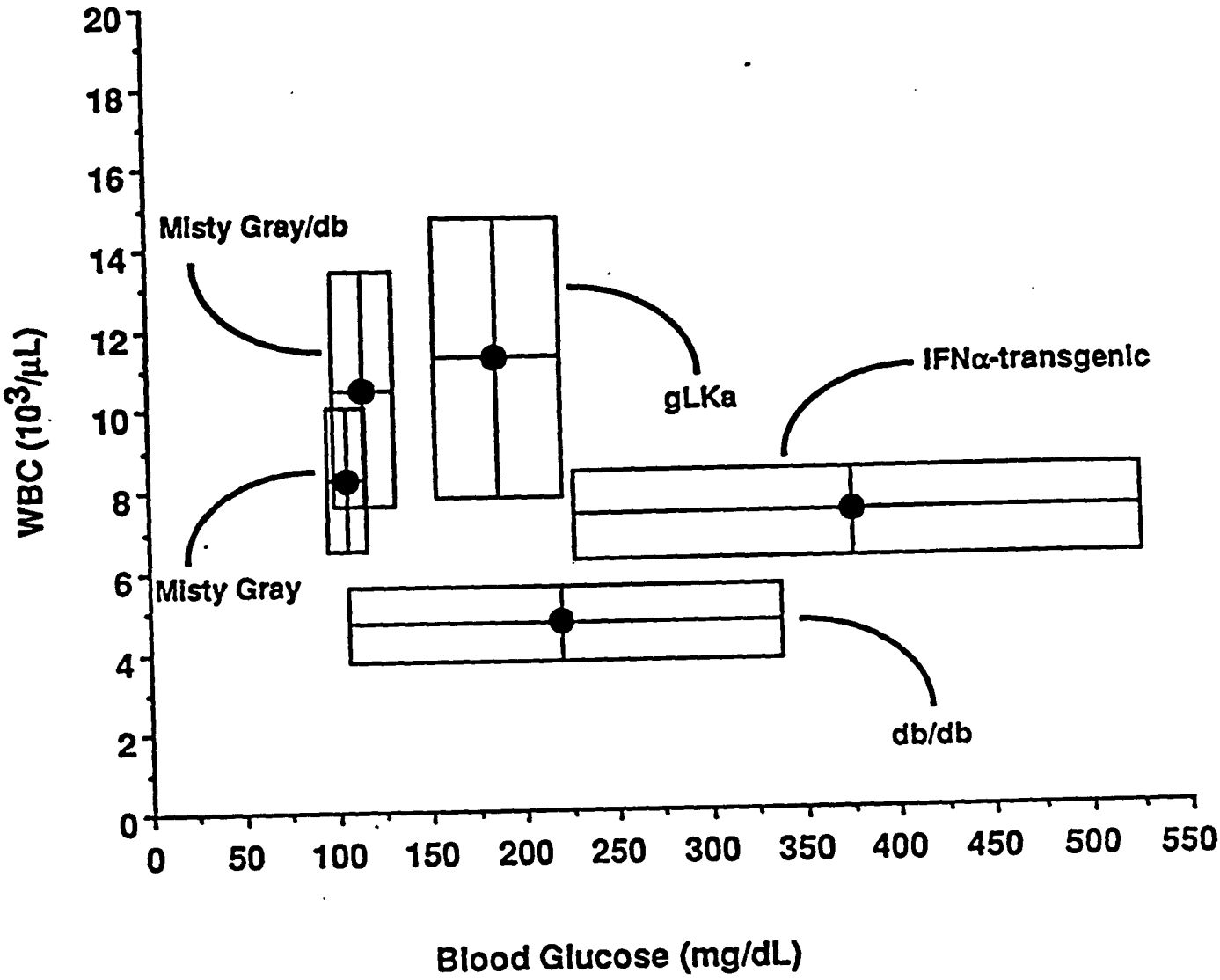

20
18
16
14
12
10
8
6
4
2
0
WBC (10^3/μL)
Misty Gray/db
gLKa
IFNα-transgenic
Misty Gray
db/db
0
50
100
150
200
250
300
350
400
450
500
550
Blood Glucose (mg/dL)

Figure 14

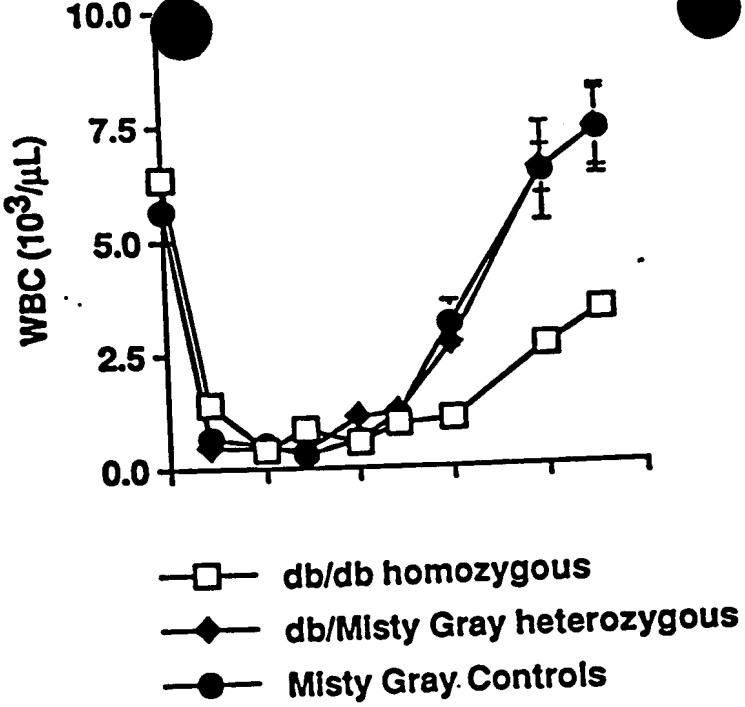


Figure 15A

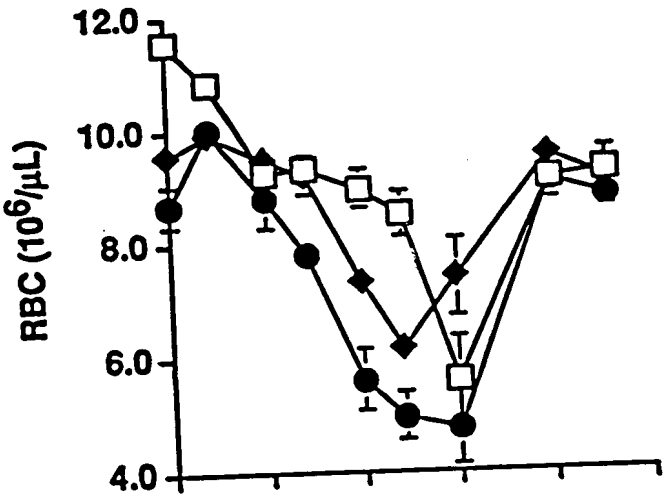


Figure 15B

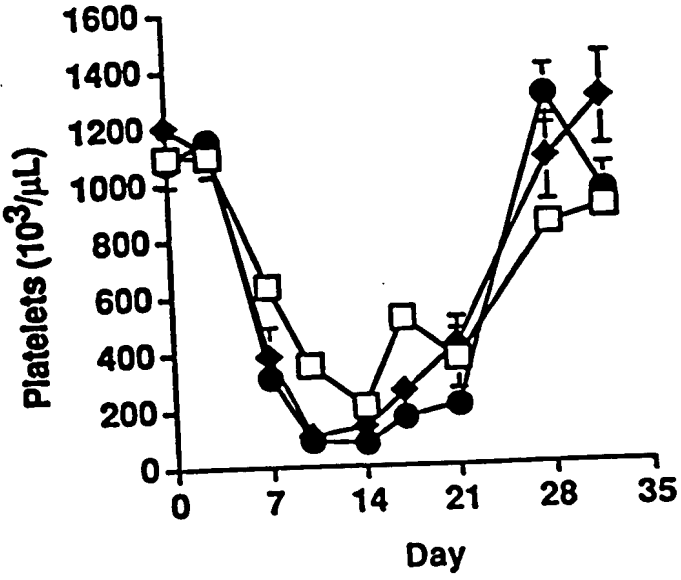


Figure 15C

```
> sites: std
> length: 7127 (circular)

      aluI
     sstI
     sacI
     hgiJII
     hgiAI/aspHI
     ecl136II
     bsp1286
     bsiHKAI
     bmyI                                             rmaI    tru9I
     banII                                            maeI    mseI                                                                  thaI
    taqI                                             speI   aseI/asnI/vspI                            bslI                            fnuDII/mvnI
  1 TTCGAGCTCG CCCGACATTG ATTATTGACT AGTTATTAAT AGTAATCAAT TACGGGGTCA TTAGTTCATA GCCCATATAT GGAGTTCCGC GTTACATAAC
    AAGCTCGAGC GGGCTGTAAC TAATAACTGA TCAATAATTA TCATTAGTTA ATGCCCCAGT AATCAAGTAT CGGGTATATA CCTCAAGGCG CAATGTATTG
                                                                                                                  bstUI
                                                                                                                  bsh1236I
                                                                                                                 aciI maeIII

                scrFI
                mvaI
                ecoRII
                dsaV
              aciI
            bglI bstNI                                    maeII
           sau96I                                         hinlI/acyI
           haeIII/palI    aciI                            ahaII/bsaHI
           asuI  apyI[dcm+]           aciI                aatII          maeII         maeIII
101 TTACGGTAAA TGGCCCGCCT GGCTGACCGC CCAACGACCC CCGCCCATTG ACGTCAATAA TGACGTATGT TCCCATAGTA ACGCCAATAG GGACTTTCCA
    AATGCCATTT ACCGGGCGGA CCGACTGGCG GGTTGCTGGG GGCGGGTAAC TGCAGTTATT ACTGCATACA AGGGTATCAT TGCGGTTATC CCTGAAAGGT

     maeII                                                                                         maeII
    hinlI/acyI                                                                                     hinlI/acyI
    ahaII/bsaHI                                       rsaI                        rsaI             ahaII/bsaHI
    aatII                              bglI           csp6I             ndeI      csp6I            aatII
201 TTGACGTCAA TGGGTGGAGT ATTTACGGTA AACTGCCCAC TTGGCAGTAC ATCAAGTGTA TCATATGCCA AGTACGCCCC CTATTGACGT CAATGACGGT
    AACTGCAGTT ACCCACCTCA TAAATGCCAT TTGACGGGTG AACCGTCATG TAGTTCACAT AGTATACGGT TCATGCGGGG GATAACTGCA GTTACTGCCA

           scrFI
           mvaI
           ecoRII
        aciI                                                                                              nlaIII
      bglI  dsaV                                                                              styI
     sau96I bstNI           rsaI                                                 maeII              ncoI
     haeIII/palI            csp6I                                       rsaI     snaBI              dsaI hphI  aciI
     asuI  apyI[dcm+]     bsrI  nlaIII                                  csp6I    bsaAI              bsaJI   sfaNI
301 AAATGGCCCG CCTGGCATTA TGCCCAGTAC ATGACCTTAT GGGACTTTCC TACTTGGCAG TACATCTACG TATTAGTCAT CGCTATTACC ATGGTGATGC
    TTTACCGGGC GGACCGTAAT ACGGGTCATG TACTGGAATA CCCTGAAAGG ATGAACCGTC ATGTAGATGC ATAATCAGTA GCGATAATGG TACCACTACG
```

Figure 16A

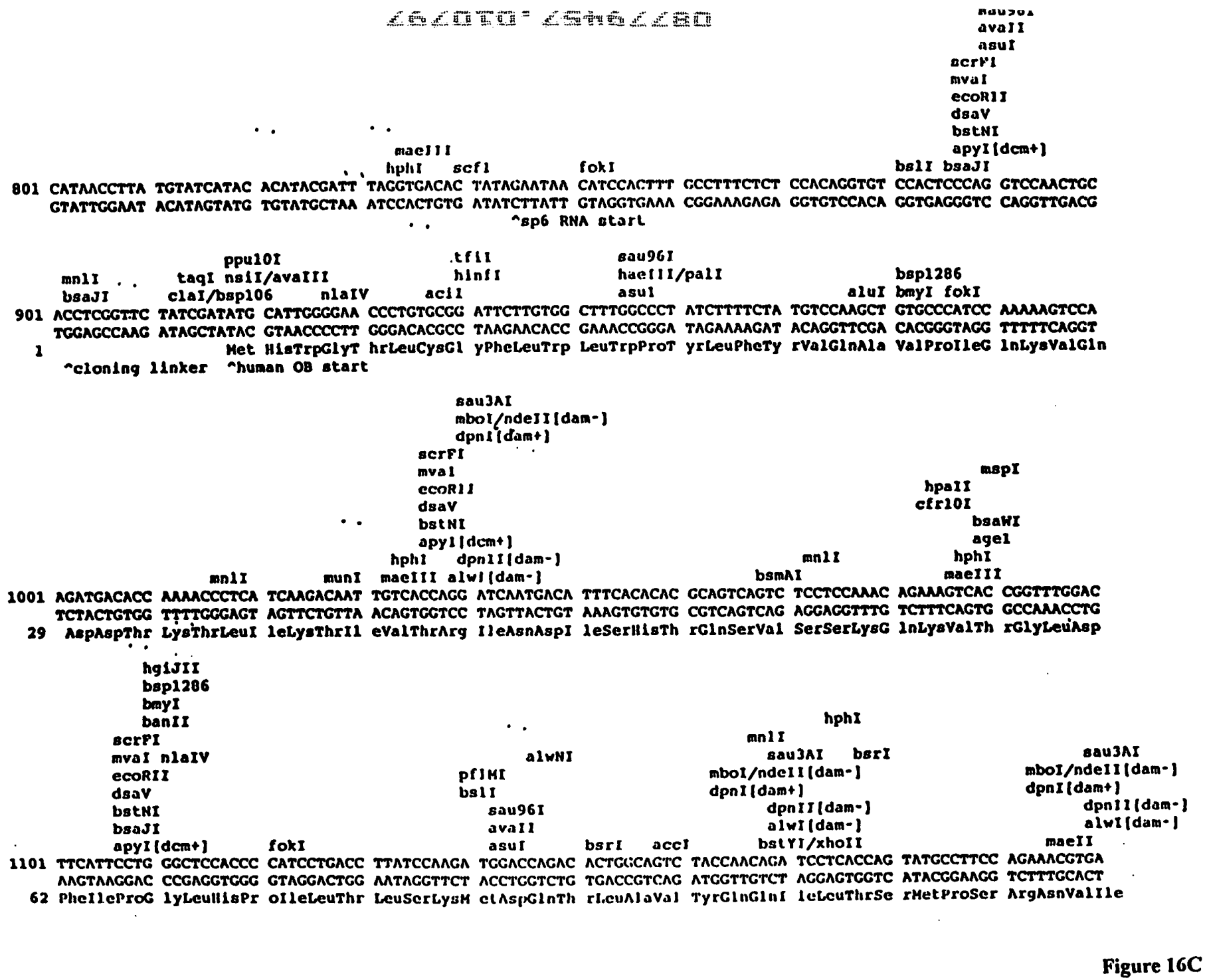
```
                                                                                            maeII
                                                                                            hinlI/acyI            nlaIV
          rsaI                         pleI                                                 ahaII/bsaHI           hgiCI
          csp6I                 aciI   hinfI                           bsmAI                aatII                 banI
401 GGTTTTGGCA GTACATCAAT GGGCGTGGAT AGCGGTTTGA CTCACGGGGA TTTCCAAGTC TCCACCCCAT TGACGTCAAT GGGAGTTTGT TTTGGCACCA
    CCAAAACCGT CATGTAGTTA CCCGCACCTA TCGCCAAACT GAGTGCCCCT AAAGGTTCAG AGGTGGGGTA ACTGCAGTTA CCCTCAAACA AAACCGTGGT

                                                                                                                 aluI
                                                                                                                 sstI
                                                                                                                 sacI
                                                                                                                 hgiJII
                                                                                                                 hgiAI/aspHI
                                                                                                                 ecl136II
                                                                                                                 bsp1286
                                                                                                                 bsiHKAI
                                                                                 rsaI                            bmyI
                           maeIII     aciI       hgaI        aciI                csp6I       mnlI                banII
501 AAATCAACGG GACTTTCCAA AATGTCGTAA CAACTCCGCC CCATTGACGC AAATGGGCGG TAGGCGTGTA CGGTGGGAGG TCTATATAAG CAGAGCTCGT
    TTTAGTTGCC CTGAAAGGTT TTACAGCATT GTTGAGGCGG GGTAACTGCG TTTACCCGCC ATCCGCACAT GCCACCCTCC AGATATATTC GTCTCGAGCA

                                                                                                     haeIII/palI
                                                                                                    mcrI
                                                                                                    eagI/xmaIII/eclXI
                                                                                                    eaeI
                                                                                                    cfrI
                                                                                                   fnu4HI
                                                                                                   aciI
                                                                                                  thaI
                       esp3I                                                                      fnuDII/mvnI
                  scrFI                                                   sau96I             sacII/sstII
                  mvaI bsmAI                                                    avaII             nspBII
                  ecoRII                                                  asuI               kspI scrFI
                  dsaV                                                   nlaIV               dsaI nciI
                  bstNI  hinlI/acyI                                          scrFI            bglI bslI   mspI
                  apyI(dcm+)                                                 nciI        sau3AI mnlI bstUI
             sau3AI gsuI/bpmI                                                mspI        mboI/ndeII(dam-) hpaII
             mboI/ndeII(dam-)                                    mboII       hpaII       dpnI(dam+) bsaJI dsaV
             dpnI(dam+)  hgaI   fokI                             bpuAI       dsaV        dpnII(dam-) bsh1236I
             dpnII(dam-) ahaII/bsaHI                 mnlI        bbsI        cauII       alwI(dam-) aciI   cauII
601 TTAGTGAACC GTCAGATCGC CTGGAGACGC CATCCACGCT GTTTTGACCT CCATAGAAGA CACCGGGACC GATCCAGCCT CCGCGGCCGG GAACGGTGCA
    AATCACTTGG CAGTCTAGCG GACCTCTGCG GTAGGTGCGA CAAAACTGGA GGTATCTTCT GTGGCCCTGG CTAGGTCGGA GGCGCCGGCC CTTGCCACGT
               ^Begin RNA

             tfiI                                                                                    fnu4HI
         aciI                                                                                        aciI
        thaI hinfI                                                bstXI                             thaI
        fnuDII/mvnI                      aciI                     sau96I     styI                   fnuDII/mvnI tru9I
        bstUI                    maeII rsaI              pleI scfI haeIII/palI                      bstUI       mseI
        bsh1236I              maeIII     csp6I    scfI hinfI      asuI       bsaJI                  bsh1236I    aseI/asnI/vspI
701 TTGGAACGCG GATTCCCCGT GCCAAGAGTG ACGTAAGTAC CGCCTATAGA GTCTATAGGC CCACCCCCTT GGCTTCGTTA GAACGCGGCT ACAATTAATA
    AACCTTGCGC CTAAGGGGCA CGGTTCTCAC TGCATTCATG GCGGATATCT CAGATATCCG GGTGGGGGAA CCGAAGCAAT CTTGCGCCGA TGTTAATTAT
                                                                                       ^sp6 promoter
```

Figure 16B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asuI
ecoRII
dsaV
bstNI
apyI[dcm+]
maeIII
hphI scfI fokI
bslI bsaJI
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GTATTGGAAT ACATAGTATG TGTATGCTAA ATCCACTGTG ATATCTTATT GTAGGTGAAA CGGAAAGAGA GGTGTCCACA GGTGAGGGTC CAGGTTGACG
^sp6 RNA start
ppu10I
tfiI
sau96I
mnlI taqI nsiI/avaIII
hinfI
haeIII/palI
bsp1286
bsaJI claI/bsp106 nlaIV acil
asuI
aluI bmyI fokI
901 ACCTCGGTTC TATCGATATG CATTGGGGAA CCCTGTGCGG ATTCTTGTGG CTTTGGCCCT ATCTTTTCTA TGTCCAAGCT GTGCCCATCC AAAAAGTCCA
TGGAGCCAAG ATAGCTATAC GTAACCCCTT GGGACACGCC TAAGAACACC GAAACCGGGA TAGAAAAGAT ACAGGTTCGA CACGGGTAGG TTTTTCAGGT
1 Met HisTrpGlyT hrLeuCysGl yPheLeuTrp LeuTrpProT yrLeuPheTy rValGlnAla ValProIleG lnLysValGln
^cloning linker ^human OB start
sau3AI
mboI/ndeII[dam-]
dpnI[dam+]
scrFI
mvaI
ecoRII
dsaV
bstNI
apyI[dcm+]
hphI dpnII[dam-]
mspI
hpaII
cfr10I
bsaWI
agel
hphI
maeIII
mnlI munI maeIII alwI[dam-]
mnlI
bsmAI
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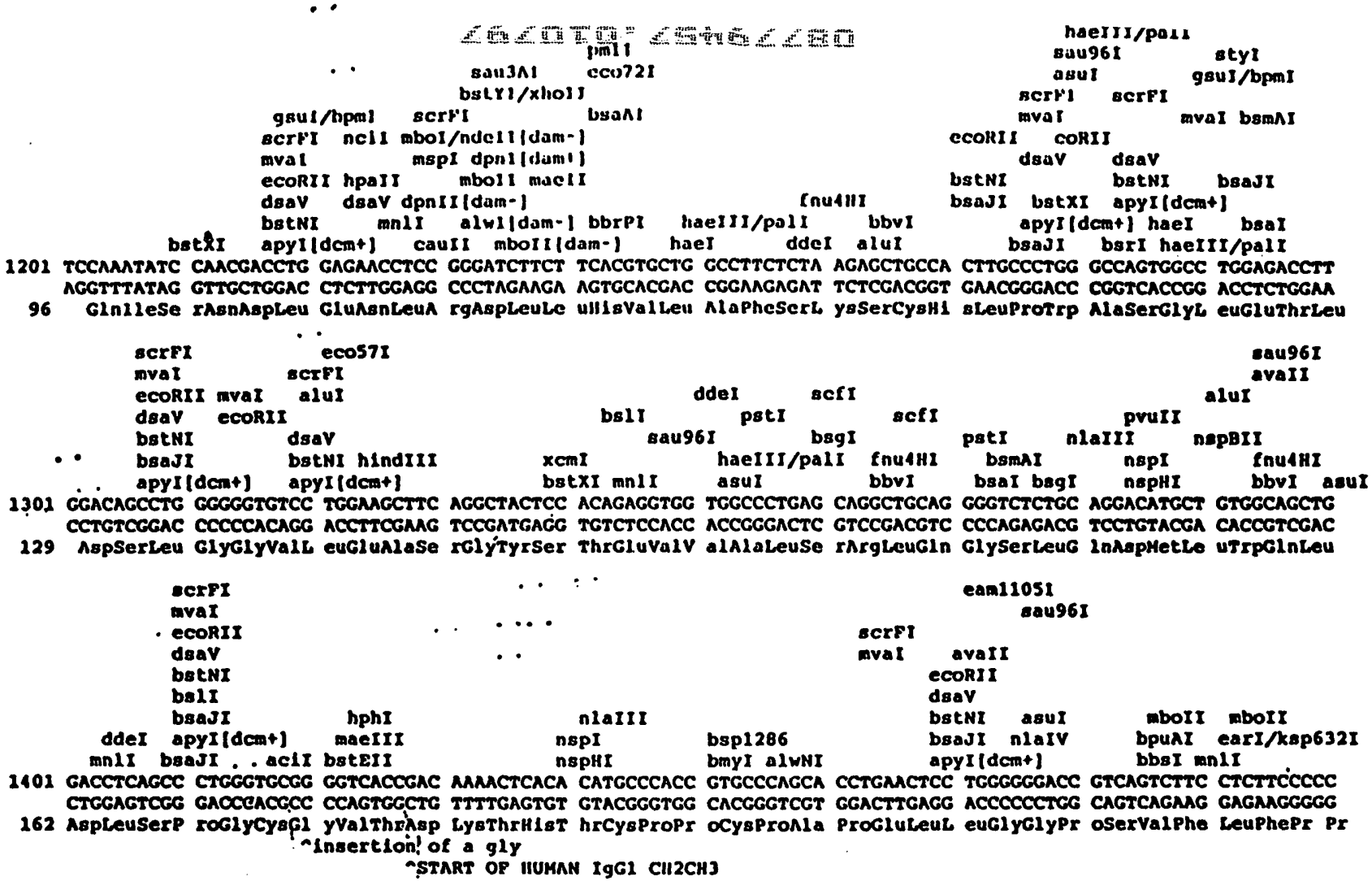
TCTACTGTGG TTTTGGGAGT AGTTCTGTTA ACAGTGGTCC TAGTTACTGT AAAGTGTGTG CGTCAGTCAG AGGAGGTTTG TCTTTCAGTG GCCAAACCTG
29 AspAspThr LysThrLeuI leLysThrIl eValThrArg IleAsnAspI leSerHisTh rGlnSerVal SerSerLysG lnLysValTh rGlyLeuAsp
hgiJII
bsp1286
bmyI
banII
hphI
mnlI
scrFI
mvaI nlaIV
alwNI
sau3AI bsrI
sau3AI
ecoRII
pflMI
mboI/ndeII[dam-]
mboI/ndeII[dam-]
dsaV
bslI
dpnI[dam+]
dpnI[dam+]
bstNI
sau96I
dpnII[dam-]
dpnII[dam-]
bsaJI
avaII
alwI[dam-]
alwI[dam-]
apyI[dcm+] fokI
asuI bsrI accI
bstYI/xhoII
maeII
1101 TTCATTCCTG GGCTCCACCC CATCCTGACC TTATCCAAGA TGGACCAGAC ACTGGCAGTC TACCAACAGA TCCTCACCAG TATGCCTTCC AGAAACGTGA
AAGTAAGGAC CCGAGGTGGG GTAGGACTGG AATAGGTTCT ACCTGGTCTG TGACCGTCAG ATGGTTGTCT AGGAGTGGTC ATACGGAAGG TCTTTGCACT
62 PheIleProG lyLeuHisPr oIleLeuThr LeuSerLysM etAspGlnTh rLeuAlaVal TyrGlnGlnI leLeuThrSe rMetProSer ArgAsnValIle

Figure 16C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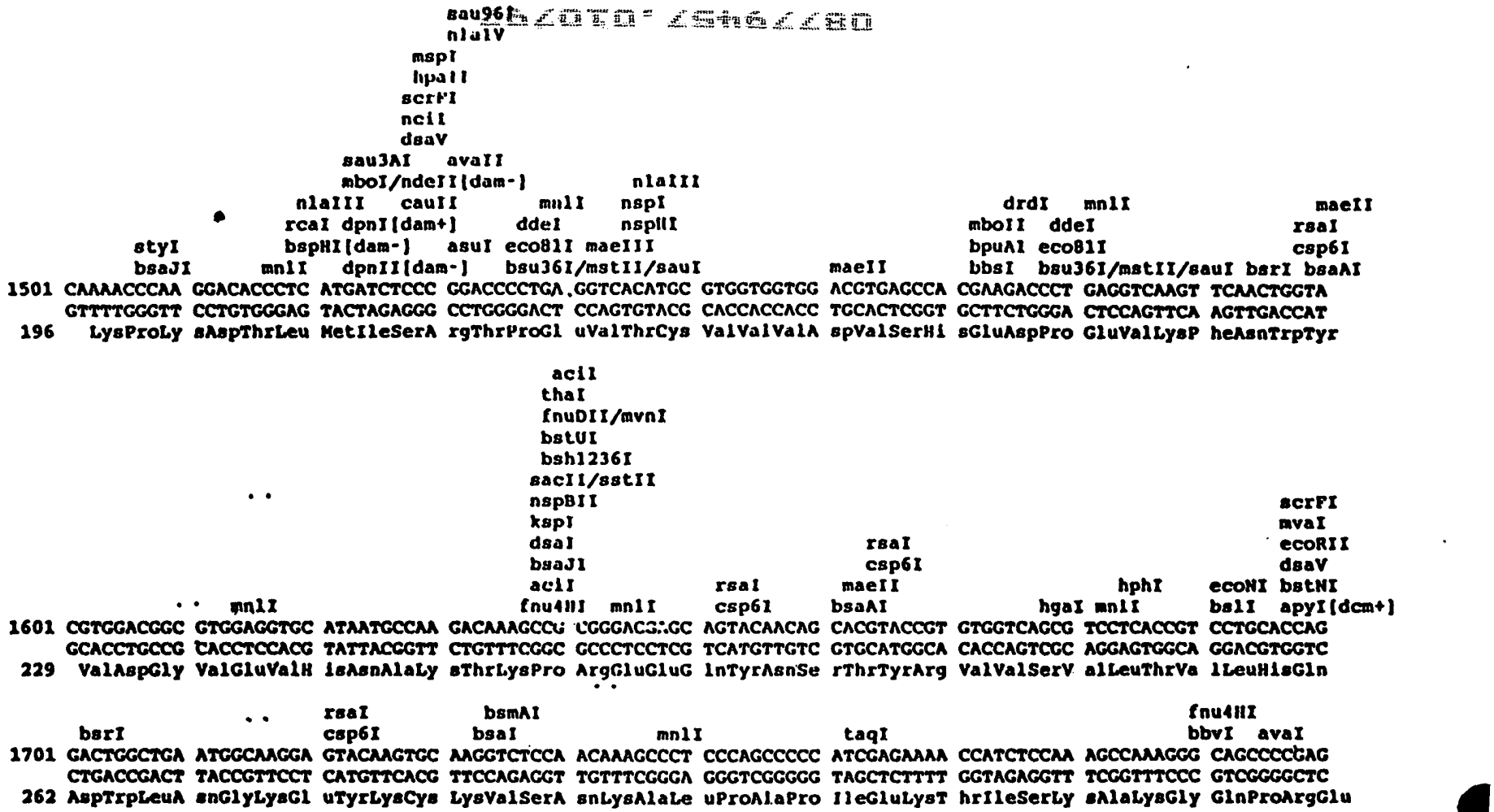
bstYI/xhoII
gsuI/bpmI scrFI bsaAI
scrFI ncii mboI/ndeII(dam-)
mvaI mspI dpnI(dam+)
ecoRII hpaII mboII maeII
dsaV dsaV dpnII(dam-)
bstNI mnlI alwI(dam-) bbrPI haeIII/paiI bbvI
bstXI apyI(dcm+) cauII mboII(dam-) haeI ddeI aluI
1201 TCCAAATATC CAACGACCTG GAGAACCTCC GGGATCTTCT TCACGTGCTG GCCTTCTCTA AGAGCTGCCA CTTGCCCTGG GCCAGTGGCC TGGAGACCTT
AGGTTTATAG GTTGCTGGAC CTCTTGGAGG CCCTAGAAGA AGTGCACGAC CGGAAGAGAT TCTCGACGGT GAACGGGACC CGGTCACCGG ACCTCTGGAA
96 GlnIleSe rAsnAspLeu GluAsnLeuA rgAspLeuLe uHisValLeu AlaPheSerL ysSerCysHi sLeuProTrp AlaSerGlyL euGluThrLeu
haeIII/paiI
sau96I styI
asuI gsuI/bpmI
scrFI scrFI
mvaI mvaI bsmAI
ecoRII coRII
dsaV dsaV
bstNI bstNI bsaJI
fnu4HI bsaJI bstXI apyI(dcm+)
apyI(dcm+) haeI bsaI
bsaJI bsrI haeIII/paiI
scrFI eco57I
mvaI scrFI
ecoRII mvaI aluI
dsaV ecoRII
bstNI dsaV
bsaJI bstNI hindIII
apyI(dcm+) apyI(dcm+)
ddeI scfI
bslI pstI scfI
sau96I bsgI
xcmI haeIII/paiI fnu4HI
bstXI mnlI asuI bbvI
1301 GGACAGCCTG GGGGGTGTCC TGGAAGCTTC AGGCTACTCC ACAGAGGTGG TGGCCCTGAG CAGGCTGCAG GGGTCTCTGC AGGACATGCT GTGGCAGCTG
CCTGTCGGAC CCCCCACAGG ACCTTCGAAG TCCGATGAGG TGTCTCCACC ACCGGGACTC GTCCGACGTC CCCAGAGACG TCCTGTACGA CACCGTCGAC
129 AspSerLeu GlyGlyValL euGluAlaSe rGlyTyrSer ThrGluValV alAlaLeuSe rArgLeuGln GlySerLeuG lnAspMetLe uTrpGlnLeu
sau96I
avaII
aluI
pvuII
nlaIII nspBII
bsmAI nspI fnu4HI
bbvI bsaI bsgI nspHI bbvI asuI
scrFI
mvaI
ecoRII
dsaV
bstNI
bslI
bsaJI hphI
ddeI apyI(dcm+) maeIII
mnlI bsaJI . . aciI bstEII
nlaIII
nspI bsp1286
nspHI bmyI alwNI
eam1105I
sau96I
scrFI
mvaI avaII
ecoRII
dsaV
bstNI asuI mboII mboII
bsaJI nlaIV bpuAI earI/ksp632I
apyI(dcm+) bbsI mnlI
1401 GACCTCAGCC CTGGGTGCGG GGTCACCGAC AAAACTCACA CATGCCCACC GTGCCCAGCA CCTGAACTCC TGGGGGGACC GTCAGTCTTC CTCTTCCCCC
CTGGAGTCGG GACCCACGCC CCAGTGGCTG TTTTGAGTGT GTACGGGTGG CACGGGTCGT GGACTTGAGG ACCCCCCTGG CAGTCAGAAG GAGAAGGGGG
162 AspLeuSerP roGlyCysGl yValThrAsp LysThrHisT hrCysProPr oCysProAla ProGluLeuL euGlyGlyPr oSerValPhe LeuPhePr Pr
^insertion of a gly
^START OF HUMAN IgG1 CH2CH3

Figure 16D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nlaIV
mspI
hpaII
scrFI
nciI
dsaV
sau3AI avaII
mboI/ndeII(dam-) nlaIII
nlaIII cauII mnlI nspI drdI mnlI maeII
rcaI dpnI(dam+) ddeI nspII mboII ddeI rsaI
styI bspHI(dam-) asuI eco81I maeIII bpuAI eco81I csp6I
bsaJI mnlI dpnII(dam-) bsu36I/mstII/sauI maeII bbsI bsu36I/mstII/sauI bsrI bsaAI
1501 CAAAACCCAA GGACACCCTC ATGATCTCCC GGACCCCTGA.GGTCACATGC GTGGTGGTGG ACGTGAGCCA CGAAGACCCT GAGGTCAAGT TCAACTGGTA
GTTTTGGGTT CCTGTGGGAG TACTAGAGGG CCTGGGGACT CCAGTGTACG CACCACCACC TGCACTCGGT GCTTCTGGGA CTCCAGTTCA AGTTGACCAT
196 LysProLy sAspThrLeu MetIleSerA rgThrProGl uValThrCys ValValValA spValSerHi sGluAspPro GluValLysP heAsnTrpTyr
acII
thaI
fnuDII/mvnI
bstUI
bsh1236I
sacII/sstII
nspBII scrFI
kspI mvaI
dsaI rsaI ecoRII
bsaJI csp6I dsaV
acII rsaI maeII hphI ecoNI bstNI
mnlI fnu4HI mnlI csp6I bsaAI hgaI mnlI bslI apyI(dcm+)
1601 CGTGGACGGC GTGGAGGTGC ATAATGCCAA GACAAAGCCG CGGGACGAGC AGTACAACAG CACGTACCGT GTGGTCAGCG TCCTCACCGT CCTGCACCAG
GCACCTGCCG CACCTCCACG TATTACGGTT CTGTTTCGGC GCCCTCCTCG TCATGTTGTC GTGCATGGCA CACCAGTCGC AGGAGTGGCA GGACGTGGTC
229 ValAspGly ValGluValH isAsnAlaLy sThrLysPro ArgGluGluG lnTyrAsnSe rThrTyrArg ValValSerV alLeuThrVa lLeuHisGln
rsaI bsmAI fnu4HI
bsrI csp6I bsaI mnlI taqI bbvI avaI
1701 GACTGGCTGA ATGGCAAGGA GTACAAGTGC AAGGTCTCCA ACAAAGCCCT CCCAGCCCCC ATCGAGAAAA CCATCTCCAA AGCCAAAGGG CAGCCCCGAG
CTGACCGACT TACCGTTCCT CATGTTCACG TTCCAGAGGT TGTTTCGGGA GGGTCGGGGG TAGCTCTTTT GGTAGAGGTT TCGGTTTCCC GTCGGGGCTC
262 AspTrpLeuA snGlyLysGl uTyrLysCys LysValSerA snLysAlaLe uProAlaPro IleGluLysT hrIleSerLy sAlaLysGly GlnProArgGlu

Figure 16E

scrFI
nciI
mspI
hpaII
dsaV
cauII
xmaI/pspAI
smaI
scrFI
nciI
dsaV
cauII
scrFI
mvaI
ecoRII
dsaV
scrFI
mvaI
ecoRII
dsaV
rsaI
csp6I
bspl407I
fokI
bslI bsaJI mboII
bslI avaI earI/ksp632I
bstNI
apyI[dcm+]
sexAI
bstNI
apyI[dcm+]
bspMI
dsaI
bslI
bsaJI
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TTGGTGTCCA CATGTGGGAC GGGGGTAGGG CCCTTCTCTA CTGGTTCTTG GTCCAGTCGG ACTGGACGGA CCAGTTTCCG AAGATAGGGT CGCTGTAGCG
296 ProGlnVa lTyrThrLeu ProProSerA rgGluGluMe tThrLysAsn GlnValSerL euThrCysLe uValLysGly PheTyrProS erAspIleAla
mspI
hpaII
fnu4HI
bbvI
mnlI
pleI
hinfI
mnlI
nlaIV mboII
scfI
hphI
aluI bsaJI
dsaI
1901 CGTGGAGTGG GAGAGCAATG GGCAGCCGGA GAACAACTAC AAGACCACGC CTCCCGTGCT GGACTCCGAC GGCTCCTTCT TCCTCTACAG CAAGCTCACC
GCACCTCACC CTCTCGTTAC CCGTCGGCCT CTTGTTGATG TTCTGGTGCG GAGGGCACGA CCTGAGGCTG CCGAGGAAGA AGGAGATGTC GTTCGAGTGG
329 ValGluTrp GluSerAsnG lyGlnProGl uAsnAsnTyr LysThrThrP roProValLe uAspSerAsp GlySerPheP heLeuTyrSe rLysLeuThr
scrFI
nciI
mspI
hpaII
dsaV
mboII
bpuAI
maeII
fnu4HI
xmnI bbsI
nlaIII
ppu10I
nsiI/avaIII
sapI
mboII mnlI
bsmAI
bspMI bbvI
asp700
nlaIII
sfaNI mnlI
earI/ksp632I bslI
cauII
2001 GTGGACAAGA GCAGGTGGCA GCAGGGGAAC GTCTTCTCAT GCTCCGTGAT GCATGAGGCT CTGCACAACC ACTACACGCA GAAGAGCCTC TCCCTGTCTC
CACCTGTTCT CGTCCACCGT CGTCCCCTTG CAGAAGAGTA CGAGGCACTA CGTACTCCGA GACGTGTTGG TGATGTGCGT CTTCTCGGAG AGGGACAGAG
362 ValAspLysS erArgTrpGl nGlnGlyAsn ValPheSerC ysSerValMe tHisGluAla LeuHisAsnH isTyrThrGl nLysSerLeu SerLeuSerPro
sau96I
nlaIII
taqI
salI
pleI scfI
rmaI hincII/hindII
sau96I hinfI pstI
haeIII/palI bsgI
asuI maeI accI bspMI
taqI
pleI scfI
rmaI salI pstI
xbaI hincII/hindII
aluI maeI accI bsgI
hindIII hinfI bspMI
fnu4HI haeIII/palI
bglI styI
sfiI ncoI
eaeI dsaI
cfrI bsaJI
aluI haeIII/palI
hindIII aciI asuI
aluI
fnu4HI
bbvI
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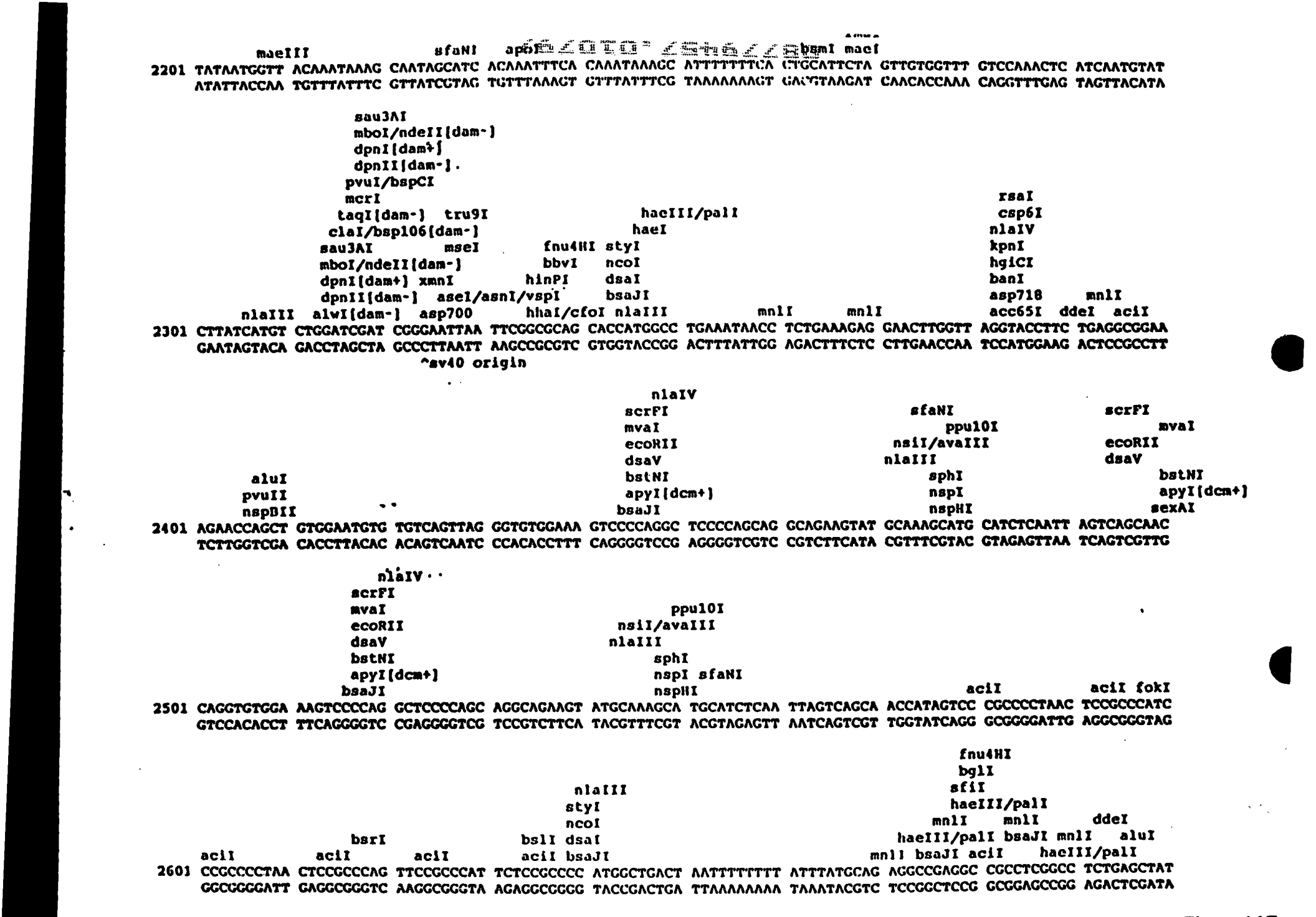
GCCCATTTAC TCACGCTGCC GGGATCTCAG CTGGACGTCT TCGAAGATCT CAGCTGGACG TCTTCGAACC GGCGGTACCG GGTTGAACAA ATAACGTCGA
396 GlyLys
^sv40 early poly A

Figure 16F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ATATTACCAA TGTTTATTTC GTTATCGTAG TGTTTAAAGT GTTTATTTCG TAAAAAAAGT GACGTAAGAT CAACACCAAA CAGGTTTGAG TAGTTACATA
sau3AI
mboI/ndeII(dam-)
dpnI(dam+)
dpnII(dam-).
pvuI/bspCI
mcrI
taqI(dam-) tru9I
claI/bsp106(dam-)
sau3AI mseI
mboI/ndeII(dam-)
dpnI(dam+) xmnI
dpnII(dam-) aseI/asnI/vspI
nlaIII alwI(dam-) asp700
hhaI/cfoI nlaIII
haeIII/palI
haeI
fnu4HI styI
bbvI ncoI
hinPI dsaI
bsaJI
mnlI mnlI
rsaI
csp6I
nlaIV
kpnI
hgiCI
banI
asp718 mnlI
acc65I ddeI aciI
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GAATAGTACA GACCTAGCTA GCCCTTAATT AAGCCGCGTC GTGGTACCGG ACTTTATTGG AGACTTTCTC CTTGAACCAA TCCATGGAAG ACTCCGCCTT
^sv40 origin
nlaIV
scrFI
mvaI
ecoRII
dsaV
bstNI
apyI(dcm+)
bsaJI
sfaNI
ppuI0I
nsiI/avaIII
nlaIII
sphI
nspI
nspHI
scrFI
mvaI
ecoRII
dsaV
bstNI
apyI(dcm+)
sexAI
aluI
pvuII
nspBII
2401 AGAACCAGCT GTGGAATGTG TGTCAGTTAG GGTGTGGAAA GTCCCCAGGC TCCCCAGCAG GCAGAAGTAT GCAAAGCATG CATCTCAATT AGTCAGCAAC
TCTTGGTCGA CACCTTACAC ACAGTCAATC CCACACCTTT CAGGGGTCCG AGGGGTCGTC CGTCTTCATA CGTTTCGTAC GTAGAGTTAA TCAGTCGTTG
nlaIV
scrFI
mvaI
ecoRII
dsaV
bstNI
apyI(dcm+)
bsaJI
ppuI0I
nsiI/avaIII
nlaIII
sphI
nspI sfaNI
nspHI
aciI aciI fokI
2501 CAGGTGTGGA AAGTCCCCAG GCTCCCCAGC AGGCAGAAGT ATGCAAAGCA TGCATCTCAA TTAGTCAGCA ACCATAGTCC CGCCCCTAAC TCCGCCCATC
GTCCACACCT TTCAGGGGTC CGAGGGGTCG TCCGTCTTCA TACGTTTCGT ACGTAGAGTT AATCAGTCGT TGGTATCAGG GCGGGGATTG AGGCGGGTAG
fnu4HI
bglI
sfiI
haeIII/palI
mnlI mnlI ddeI
haeIII/palI bsaJI mnlI aluI
mnlI bsaJI aciI haeIII/palI
nlaIII
styI
ncoI
bsrI
bslI dsaI
aciI aciI aciI aciI bsaJI
2601 CCGCCCCTAA CTCCGCCCAG TTCCGCCCAT TCTCCGCCCC ATGGCTGACT AATTTTTTTT ATTTATGCAG AGGCCGAGGC CGCCTCGGCC TCTGAGCTAT
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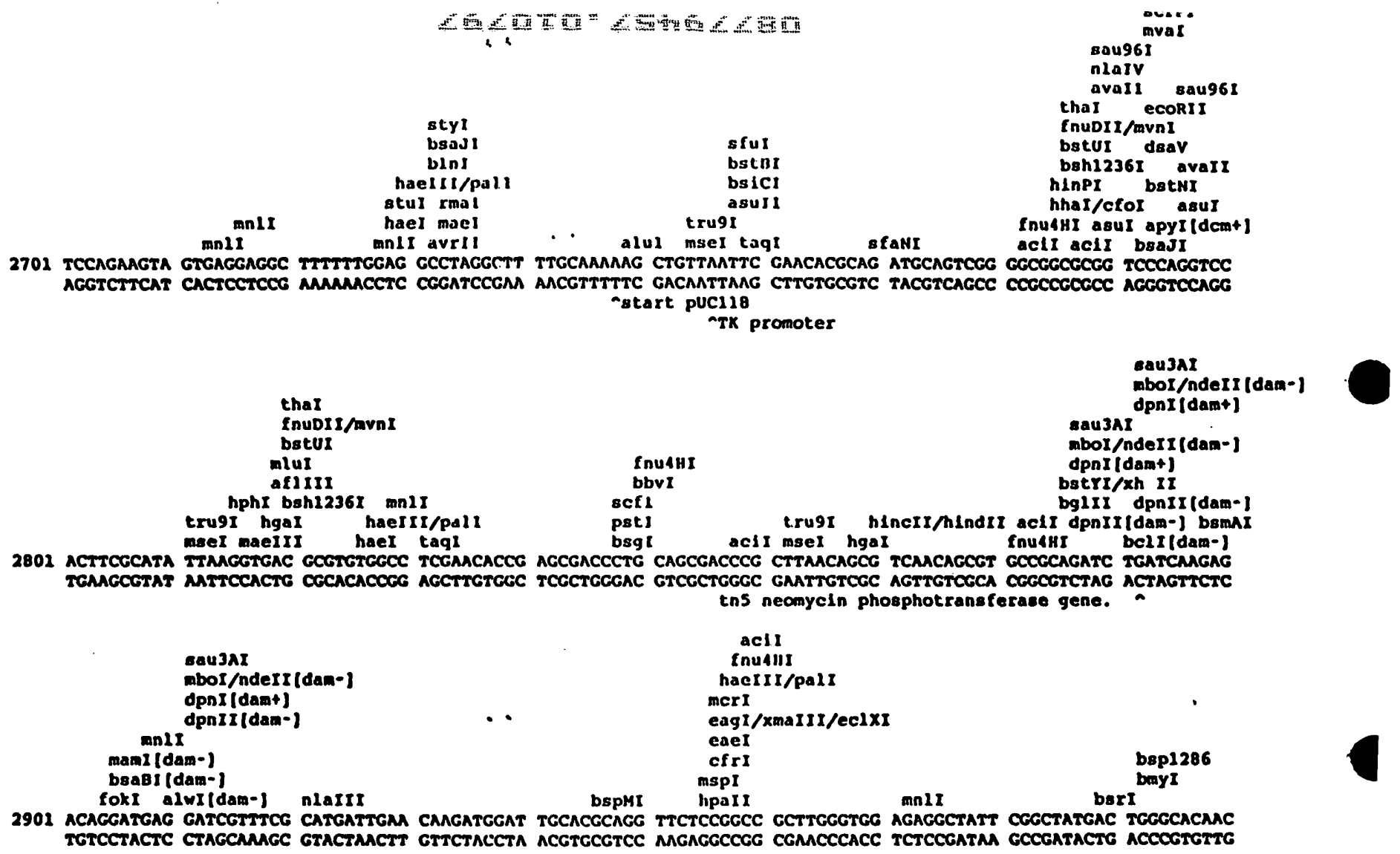
Figure 16G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sau96I
nlaIV
avaII sau96I
thaI ecoRII
styI fnuDII/mvnI
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haeIII/pall bsiCI hinPI bstNI
stuI rmaI asuII hhaI/cfoI asuI
mnlI haeI maeI tru9I fnu4HI asuI apyI[dcm+]
mnlI mnlI avrII alul mseI taqI sfaNI aciI aciI bsaJI
2701 TCCAGAAGTA GTGAGGAGGC TTTTTTGGAG GCCTAGGCTT TTGCAAAAAG CTGTTAATTC GAACACGCAG ATGCAGTCGG GGCGGCGCGG TCCCAGGTCC
AGGTCTTCAT CACTCCTCCG AAAAAACCTC CGGATCCGAA AACGTTTTTC GACAATTAAG CTTGTGCGTC TACGTCAGCC CCGCCGCGCC AGGGTCCAGG
^start pUC118
^TK promoter
sau3AI
mboI/ndeII[dam-]
dpnI[dam+]
thaI
fnuDII/mvnI
bstUI
sau3AI
mboI/ndeII[dam-]
dpnI[dam+]
mluI fnu4HI
afIIII bbvI
bstYI/xh II
hphI bsh1236I mnlI scfI
bglII dpnII[dam-]
tru9I hgaI haeIII/pall pstI tru9I hincII/hindII aciI dpnII[dam-] bsmAI
mseI maeIII haeI taqI bsgI aciI mseI hgaI fnu4HI bclI[dam-]
2801 ACTTCGCATA TTAAGGTGAC GCGTGTGGCC TCGAACACCG AGCGACCCTG CAGCGACCCG CTTAACAGCG TCAACAGCGT GCCGCAGATC TGATCAAGAG
TGAAGCGTAT AATTCCACTG CGCACACCGG AGCTTGTGGC TCGCTGGGAC GTCGCTGGGC GAATTGTCGC AGTTGTCGCA CGGCGTCTAG ACTAGTTCTC
tn5 neomycin phosphotransferase gene. ^
aciI
sau3AI fnu4HI
mboI/ndeII[dam-] haeIII/pall
dpnI[dam+] mcrI
dpnII[dam-] eagI/xmaIII/eclXI
mnlI eaeI
mamI[dam-] cfrI bsp1286
bsaBI[dam-] mspI bmyI
fokI alwI[dam-] nlaIII bspMI hpaII mnlI bsrI
2901 ACAGGATGAG GATCGTTTCG CATGATTGAA CAAGATGGAT TGCACGCAGG TTCTCCGGCC GCTTGGGTGG AGAGGCTATT CGGCTATGAC TGGGCACAAC
TGTCCTACTC CTAGCAAAGC GTACTAACTT GTTCTACCTA ACGTGCGTCC AAGAGGCCGG CGAACCCACC TCTCCGATAA GCCGATACTG ACCCGTGTTG

Figure 16H


hinPI
hhaI/cfoI
nlaIV
narI scrFI
kasI nciI
hinlI/acyI
hgiCI mspI
haeII hpaII
banI dsaV
aciI
fnu4HI
fnu4HI
mspI
hinPI
ahaII/bsaHI
bbvI
sfaNI
bslI
hpaII
hhaI/cfoI
cauII
drdI
bsaWI
bsp1286
bmyI
nlaIV
hgiCI
banI
mspI
hpaII
scfI
pstI
bsgI
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TCTGTTAGCC GACGAGACTA CGGCGGCACA AGGCCGACAG TCGCGTCCCC GCGGGCCAAG AAAAACAGTT CTGGCTGGAC AGGCCACGGG ACTTACTTGA
hgiAI/aspHI
fnu4HI
bsp1286
thaI
aluI
fnuDII/mvnI
pvuII
bstUI
fnu4HI
bsh1236I
haeIII/palI
bbvI
bsiHKAI
hinPI
mscI/balI
hinPI
bmyI
fnu4HI
haeI
hhaI/cfoI
maeII
eco57I
bbvI aciI
eaeI
mstI nspBII
tth111I/aspI
fnu4HI
mnlI
hhaI/cfoI
cfrI
aviII/fspI
taqI
maeIII
aciI
bsrI bbvI
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CGTCCTGCTC CGTCGCGCCG ATAGCACCGA CCGGTGCTGC CCGCAAGGAA CGCGTCGACA CGAGCTGCAA CAGTGACTTC GCCCTTCCCT GACCGACGAT
scrFI
nciI
sau3AI
mspI
mboI/ndeII[dam-]
fnu4HI
sau3AI
hpaII
dpnI[dam+]
fnu4HI
mboI/ndeII[dam-
dsaV
dpnII[dam-]
aciI
dpnI[dam+]
cauII
bstYI/xhoII
fnu4HI
dpnII[dam-]
bsaJI
alwI[dam-]
hphI
nlaIII
sfaNI
aciI
bbvI
alwI[dam-]
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AACCCGCTTC ACGGCCCCGT CCTAGAGGAC AGTAGAGTGG AACGAGGACG GCTCTTTCAT AGGTAGTACC GACTACGTTA CGCCGCCGAC GTATGCGAAC
sau3AI
rsaI
mboI/ndeII[dam-]
csp6I
fokI
bsaAI
sau3AI
dpnI[dam+]
hgiAI/aspHI
mboI/ndeII[dam-]
sapI
bsp1286
mspI
dpnI[dam+]
mboII
mspI
taqI
bsiHKAI
hpaII
dpnII[dam-]
earI/ksp632I
hpaII bspMI
taqI
sfaNI
bmyI maeII
fokI
cfr10I
taqI[dam-]
dpnII[dam-]
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TAGGCCGATG GACGGGTAAG CTGGTGGTTC GCTTTGTAGC GTAGCTCGCT CGTGCATGAG CCTACCTTCG GCCAGAACAG CTAGTCCTAC TAGACCTGCT

Figure 16I

sphI
nspI
nspIII
hinPI
hhaI/cfoI
hinPI
thaI
thaI
sau3AI
fnuDII/mvnI
scrFI fnuDII/mvnI
mboI/ndeII(dam-)
bstUI
mvaI
bstUI
dpnI(dam+)
styI
hgiJII
ecoRII bsh1236I
dpnII(dam-)
ncoI
bsp1286
dsaV hinPI nlaIII
bstYI/xhoII
dsaI
bmyI bsh1236I
bstNI
hhaI/cfoI
alwI(dam-)
bsaJI sfaNI
sfaNI banII hhaI/cfoI
apyI(dcm+) bssHII
mnlI
maeIII nlaIII
3401 AGAGCATCAG GGGCTCGCGC CAGCCGAACT GTTCGCCAGG CTCAAGGCGC GCATGCCCGA CGGCGAGGAT CTCGTCGTGA CCCATGGCGA TGCCTGCTTG
TCTCGTAGTC CCCGAGCGCG GTCGGCTTGA CAAGCGGTCC GAGTTCCGCG CGTACGGGCT GCCGCTCCTA GAGCAGCACT GGGTACCGCT ACGGACGAAC
mspI
bslI
hpaII
sau96I
aciI
naeI
avaII
fnu4HI
cfr10I
asuI
haeIII/palI
haeIII/palI
rsrII/cspI
eaeI
tfiI
eaeI
cpoI
nlaIII
cfrI
hinfI taqI
cfrI
aciI aciI
3501 CCGAATATCA TGGTGGAAAA TGGCCGCTTT TCTGGATTCA TCGACTGTGG CCGGCTGGGT GTGGCGGACC GCTATCAGGA CATAGCGTTG GCTACCCGTG
GGCTTATAGT ACCACCTTTT ACCGGCGAAA AGACCTAAGT AGCTGACACC GGCCGACCCA CACCGCCTGG CGATAGTCCT GTATCGCAAC CGATGGGCAC
sapI
hinPI
mboII fnu4HI
bsrBI
hhaI/cfoI
earI/ksp632I
aciI tfiI fnu4HI
eco57I aluI aciI
uctI mnlI
fnu4HI hinfI bbvI sfaNI
3601 ATATTGCTGA AGAGCTTGGC GGCGAATGGG CTGACCGCTT CCTCGTGCTT TACGGTATCG CCGCTCCCGA TTCGCAGCGC ATCGCCTTCT ATCGCCTTCT
TATAACGACT TCTCGAACCG CCGCTTACCC GACTGGCGAA GGAGCACGAA ATGCCATAGC GGCGAGGGCT AAGCGTCGCG TAGCGGAAGA TAGCGGAAGA
taqI
sfuI
aciI
bstBI
hinlI/acyI
tfiI
aciI
ddeI
pleI
bsiCI
hgaI bspMI
hinfI
fnu4HI
mboII bsrBI hinfI
asuII
ahaII/bsaHI
taqI
aciI
3701 TGACGAGTTC TTCTGAGCGG GACTCTGGGG TTCGAAATGA CCGACCAAGC GACGCCCAAC CTGCCATCAC GAGATTTCGA TTCCACCGCC GCCTTCTATG
ACTGCTCAAG AAGACTCGCC CTGAGACCCC AAGCTTTACT GGCTGGTTCG CTGCGGGTTG GACGGTAGTG CTCTAAAGCT AAGGTGGCGG CGGAAGATAC

Figure 16J

```
                                                                                                                 ncil
                                                                                                                 mspI
                                                                                                                 hpaII
                                                                                                                 dsaV
                                                                                                                 cauII
                                                                                                                 bslI
                                   hinlI/acyI                  thaI   sau3AI                                     xmaI/pspAI
                                   hgaI                   bslI fnuDII/mvnI                                       smaI
                                   ahaII/bsaHI           gsuI/bpmI  bstYI/xhoII                                  scrFI
                               scrFI                    mnlI   hinPI alwI[dam-]                                  ncil
                               nciI                   sau3AI   hhaI/cfoI         gsuI/bpmI                       dsaV
                               mspI      mspI         mboI/ndeII[dam-] mboI/ndeII[dam-]                          cauII
                               hpaII     hpaII        dpnI[dam+] bstUI dpnI[dam+]                                bsaJI
                    tfiI       dsaV     naeI          dpnII[dam-] aciI dpnII[dam-]                              bsaJI
                    hinfI      cauII    cfr10I fokI   alwI[dam-] bsh1236I    nlaIII       mboII   bslI avaI
3801 AAAGGTTGGG CTTCGGAATC GTTTTCCGGG ACGCCGGCTG GATGATCCTC CAGCGCGGGG ATCTCATGCT GGAGTTCTTC GCCCACCCCG GGAGATGGGG
     TTTCCAACCC GAAGCCTTAG CAAAAGGCCC TGCGGCCGAC CTACTAGGAG GTCGCGCCCC TAGAGTACGA CCTCAAGAAG CGGGTGGGGC CCTCTACCCC
                                                                 HSV1 tk terminator SmaI-PvuII  ^

                                                        hinPI
                                                        hhaI/cfoI
                                                       thaI
                                                       fnuDII/mvnI
                                         mspI          bstUI
                                         hpaII         bsh1236I
     mnlI                   bsmAI        bsaWI   nlaIV aciI
3901 GAGGCTAACT GAAACACGGA AGGAGACAAT ACCGGAAGGA ACCCGCGCTA TGACGGCAAT AAAAAGACAG AATAAAACGC ACGGGTGTTG GGTCGTTTGT
     CTCCGATTGA CTTTGTGCCT TCCTCTGTTA TGGCCTTCCT TGGGCGCGAT ACTGCCGTTA TTTTTCTGTC TTATTTTGCG TGCCCACAAC CCAGCAAACA

                            scrFI
                            mvaI
                            ecoRII
                            dsaV
                            bstNI
                            bsaJI
                           bslI
         aciI      sau96I                                                                     thaI
        thaI       nlaIV                                                       haeIII/palI    fnuDII/mvnI
        fnuDII/mvnI   bsaJI                                            bslI    sau96I         bstUI
        bstUI      avaII                                           bsmAI       asuI           bsh1236I
        bsh1236I   asuI apyI[dcm+]          taqI                   bsaI       nlaIV        aciI    mboII
4001 TCATAAACGC GGGGTTCGGT CCCAGGGCTG GCACTCTGTC GATACCCCAC CGAGACCCCA TTGGGGCCAA TACGCCCGCG TTTCTTCCTT TTCCCCACCC
     AGTATTTGCG CCCCAAGCCA GGGTCCCGAC CGTGAGACAG CTATGGGGTG GCTCTGGGGT AACCCCGGTT ATGCGGGCGC AAAGAAGGAA AAGGGGTGGG
```

Figure 16K

```
                                  hgiJII
                                  bsp1286                                          nlaIV
                                  bmyI                                             haeIII/palI
                               scrFI                                        sau96I
                               mvaI                                               nlaIV
                               ecoRII                                       hgiJII                     bslI
                               dsaV                                         eco0109I/draII          sau96I
                               bstNI                                              bsp1286                nlaIV
                               bsaJI                                              bsp120I                avaII styI
                               apyI(dcm+)                                         bmyI                   asuI  ncoI
                              bsaJI                                               banII                 ppuMI  dsaI
                            sau96I     bslI                            xcmI asuI dsaI              nlaIV  bsaJI
           bslI             haeIII/palI  fnu4HI          fnu4HI              dsaI apaI bsaJI             eco0109I/draII
          bslI       hphI   asuI  banII  bbvI    maeII   aciI      aciI      bsaJI asuI             tth111I/aspI nlaIII
4101 CAACCCCCAA GTTCGGGTGA AGGCCCAGGG CTCGCAGCCA ACGTCGGGGC GGCAAGCCCG CCATAGCCAC GGCCCCCGTG GGTTAGGGAC GGGGTCCCCC
     GTTGGGGGTT CAAGCCCACT TCCGGGTCCC GAGCGTCGGT TGCAGCCCCG CCGTTCGGGC GGTATCGGTG CCCGGGGCAC CCAATCCCTG CCCCAGGGGG

                                                                                                  nlaIII
                                                                                                 styI
                                                                  sau96I                         ncoI           haeIII/palI
                                                                  avaII                          dsaI          haeI
                                                                  asuI     bsrI      ddeI        bsaJI       fokI
4201 ATGGGGAATG GTTTATGGTT CGTGGGGGTT ATTCTTTTGG GCCTTGCGTG GGGTCAGGTC CACGACTGGA CTGAGCAGAC AGACCCATGG TTTTTGGATG
     TACCCCTTAC CAAATACCAA GCACCCCCAA TAAGAAAACC CGCAACGCAC CCCAGTCCAG GTGCTGACCT GACTCGTCTG TCTGGGTACC AAAAACCTAC

                                                                                                    aciI
                                                                                                   thaI
                                                                                                   fnuDII/mvnI  hinPI
                                                                                                    bstUI       hhaI/cf I
      scrFI                                      hinlI/acyI                                    bsh1236I    nlaIV
      mvaI      sau96I                                 ahaII/bsaHI                                  hinPI        narI
      ecoRII               thaI          scrFI                                             thaI          kasI
      dsaV         rsaI    fnuDII/mvnI   nciI                                              fnuDII/mvnI   hinlI/acyI
      bstNI     avaII nlaIII     bstUI         mspI                                              bstUI        hgiCI
      bslI      asuI nspI       hinPI          hpaII                                             bsh1236I     haeII
      bsaJI nlaIII   nspHI  bsrI bsh1236I      dsaV hgaI      fnu4HI                            aciI          banI
      apyI(dcm+)   aciI  csp6I  hhaI/cfoI      cauII          bbvI                         bslI hhaI/cf I     ahaII/bsaHI
4301 GCCTGGGCAT GGACCGCATG TACTGGCGCG ACACGAACAC CGGGCGTCTG TGGCTGCCAA ACACCCCCGA CCCCCAAAAA CCACCGCGCG GATTTCTGGC
     CGGACCCGTA CCTGGCGTAC ATGACCGCGC TGTGCTTGTG GCCCGCAGAC ACCGACGGTT TGTGGGGGCT GGGGGTTTTT GGTGGCGCGC CTAAAGACCG

                                                                                                                  aciI
                                                                                                                 thaI
                                                                                                                 fnuDII/mvnI
                                                                                                                 bstUI
                                                                                                                sacII/sstII
                                                                                                     haeIII/palI bsh1236I
                                                                                                    mcrI        nspBII
                                                                                                 dsaI           kspI
         mspI                                                              hinPI                 bsaJI          dsaI
         hpaII                                                       mnlI  hhaI/cfoI          hphI  eagI/xmaIII/eclXI
      aciI                                                      rsaI     haeII              maeIII  eaeI        bsaJI
      fnu4HI          bslI        sfaNI          mboII          csp6I    eco47III          bstEII   cfrI        aciI
4401 GCCGCCGGAC GAACTAAACC TGACTACGGC ATCTCTGCCC CTTCTTCGCT GGTACGAGGA GCGCTTTTGT TTTGTATTGG TCACCACGGC CGAGTTTCCG
     CGGCGGCCTG CTTGATTTGG ACTGATGCCG TAGAGACGGG GAAGAAGCGA CCATGCTCCT CGCGAAAACA AAACATAACC AGTGGTGCCG GCTCAAAGGC
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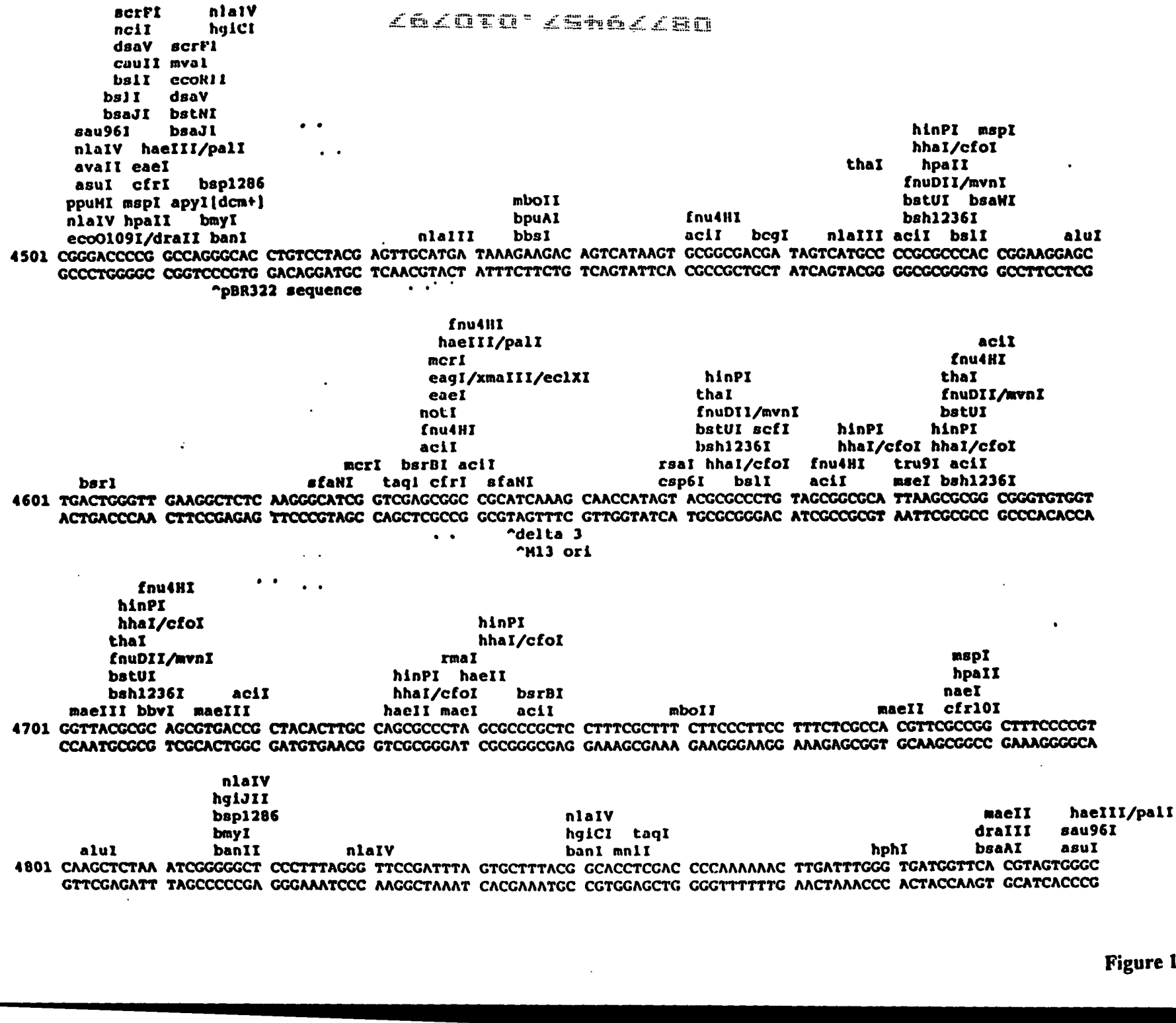
Figure 16L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bsjI dsaV
bsaJI bstNI
sau96I bsaJI
nlaIV haeIII/palI
avaII eaeI
asuI cfrI bsp1286
ppuMI mspI apyI(dcm+)
nlaIV hpaII bmyI
eco0109I/draII banI
mboII
bpuAI
nlaIII bbsI
fnu4HI
aciI bcgI nlaIII
hinPI mspI
hhaI/cfoI
thaI hpaII
fnuDII/mvnI
bstUI bsaWI
bsh1236I
aciI bslI aluI
4501 CGGGACCCCG GCCAGGGCAC CTGTCCTACG AGTTGCATGA TAAAGAAGAC AGTCATAAGT GCGGCGACGA TAGTCATGCC CCGCGCCCAC CGGAAGGAGC
GCCCTGGGGC CGGTCCCGTG GACAGGATGC TCAACGTACT ATTTCTTCTG TCAGTATTCA CGCCGCTGCT ATCAGTACGG GGCGCGGGTG GCCTTCCTCG
^pBR322 sequence
fnu4HI
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mcrI
eagI/xmaIII/eclXI
eaeI
notI
fnu4HI
aciI
hinPI
thaI
fnuDII/mvnI
bstUI scfI
bsh1236I
aciI
fnu4HI
thaI
fnuDII/mvnI
bstUI
hinPI hinPI
hhaI/cfoI hhaI/cfoI
mcrI bsrBI aciI
rsaI hhaI/cfoI fnu4HI tru9I aciI
bsrI sfaNI taqI cfrI sfaNI
csp6I bslI aciI mseI bsh1236I
4601 TGACTGGGTT GAAGGCTCTC AAGGGCATCG GTCGAGCGGC CGCATCAAAG CAACCATAGT ACGCGCCCTG TAGCGGCGCA TTAAGCGCGG CGGGTGTGGT
ACTGACCCAA CTTCCGAGAG TTCCCGTAGC CAGCTCGCCG GCGTAGTTTC GTTGGTATCA TGCGCGGGAC ATCGCCGCGT AATTCGCGCC GCCCACACCA
^delta 3
^M13 ori
fnu4HI
hinPI
hhaI/cfoI
thaI
fnuDII/mvnI
bstUI
bsh1236I aciI
hinPI
hhaI/cfoI
rmaI
hinPI haeII
hhaI/cfoI bsrBI
mspI
hpaII
naeI
maeIII bbvI maeIII
haeII maeI aciI
mboII
maeII cfr10I
4701 GGTTACGCGC AGCGTGACCG CTACACTTGC CAGCGCCCTA GCGCCCGCTC CTTTCGCTTT CTTCCCTTCC TTTCTCGCCA CGTTCGCCGG CTTTCCCCGT
CCAATGCGCG TCGCACTGGC GATGTGAACG GTCGCGGGAT CGCGGGCGAG GAAAGCGAAA GAAGGGAAGG AAAGAGCGGT GCAAGCGGCC GAAAGGGGCA
nlaIV
hgiJII
bsp1286
bmyI
alwI banII
nlaIV
nlaIV
hgiCI taqI
banI mnlI
maeII haeIII/palI
draIII sau96I
hphI bsaAI asuI
4801 CAAGCTCTAA ATCGGGGGCT CCCTTTAGGG TTCCGATTTA GTGCTTTACG GCACCTCGAC CCCAAAAAAC TTGATTTGGG TGATGGTTCA CGTAGTGGGC
GTTCGAGATT TAGCCCCCGA GGGAAATCCC AAGGCTAAAT CACGAAATGC CGTGGAGCTG GGGTTTTTTG AACTAAACCC ACTACCAAGT GCATCACCCG

Figure 16M

```
                                      maeII pleI            tru9I     pleI
                                     draIII hinfI maeIII    mseI      hinfI            bsrI                 bslI  avaI
4901 CATCGCCCTG ATAGACGGTT TTTCGCCCTT TGACGTTGGA GTCCACGTTC TTTAATAGTG GACTCTTGTT CCAAACTGGA ACAACACTCA ACCCTATCTC
     GTAGCGGGAC TATCTGCCAA AAAGCGGGAA ACTGCAACCT CAGGTGCAAG AAATTATCAC CTGAGAACAA GGTTTGACCT TGTTGTGAGT TGGGATAGAG

                                                                                               thaI
                                                                                               fnuDII/mvnI
                                                         tru9I                           tru9I   apoI tru9I
                                                         mseI             tru9I          mseI bstUI   mseI
                                             haeIII/palI           aluI   mseI     apoI     bsh1236I         sspI
5001 GGGCTATTCT TTTGATTTAT AAGGGATTTT GCCGATTTCG GCCTATTGGT TAAAAAATGA GCTGATTTAA CAAAAATTTA ACGCGAATTT TAACAAAATA
     CCCGATAAGA AAACTAAATA TTCCCTAAAA CGGCTAAAGC CGGATAACCA ATTTTTTACT CGACTAAATT GTTTTTAAAT TGCGCTTAAA ATTGTTTTAT

       maeII                 mnlI                                                               maeII
        psp1406I            haeIII/palI                               nlaIII                    hinlI/acyI
     tru9I                  stuI                                 tru9I rcaI                      ahaII/bsaHI
     mseI                   haeI                                 mseI  bspHI           ddeI aatII
5101 TTAACGTTTA CAATTTTATG GTGCAGGCCT CGTGATACGC CTATTTTTAT AGGTTAATGT CATGATAATA ATGGTTTCTT AGACGTCAGG TGGCACTTTT
     AATTGCAAAT GTTAAAATAC CACGTCCGGA GCACTATGCG GATAAAAATA TCCAATTACA GTACTATTAT TACCAAAGAA TCTGCAGTCC ACCGTGAAAA
                             ^delta 2a

                nlaIV
               aciI
              thaI
              fnuDII/mvnI
              bstUI
              bsh1236I                                                  rcaI
             hinPI                                                      bspHI
             hhaI/cfoI                                             bsrBI   bsmAI
                                                                   aciI nlaIII                              sspI
5201 CGGGGAAATG TGCGCGGAAC CCCTATTTGT TTATTTTTCT AAATACATTC AAATATGTAT CCGCTCATGA GACAATAACC CTGATAAATG CTTCAATAAT
     GCCCCTTTAC ACGCGCCTTG GGGATAAACA AATAAAAAGA TTTATGTAAG TTTATACATA GGCGAGTACT CTGTTATTGG GACTATTTAC GAAGTTATTA

           mboII                                                 fnu4HI
           earI/ksp632I                                          aciI                        hphI
5301 ATTGAAAAAG GAAGAGTATG AGTATTCAAC ATTTCCGTGT CGCCCTTATT CCCTTTTTTG CGGCATTTTG CCTTCCTGTT TTTGCTCACC CAGAAACGCT
     TAACTTTTTC CTTCTCATAC TCATAAGTTG TAAAGGCACA GCGGGAATAA GGGAAAAAAC GCCGTAAAAC GGAAGGACAA AAACGAGTGG GTCTTTGCGA

                                 hgiAI/aspHI
                                 bsp1286                        sau3AI
                     sau3AI      bsiHKAI                        mboI/ndeII(dam-)   sau3AI
                     mboI/ndeII(dam-)                           dpnI(dam+)         mboI/ndeII(dam-)
                     dpnI(dam+) bmyI                            dpnII(dam-)        dpnI(dam+)
                     dpnII(dam-)                               bstYI/xhoII         dpnII(dam-)
                 eco57I          apaLI/snoI               bsrI          nspBII     alwI(dam-)
     hphI          sfaNI mboII(dam-)  alw44I/snoI  maeIII taqI  alwI(dam-)  aciI  bstYI/xhoII            mboII
5401 GGTGAAAGTA AAAGATGCTG AAGATCAGTT GGGTGCACGA GTGGGTTACA TCGAACTGGA TCTCAACAGC GGTAAGATCC TTGAGAGTTT TCGCCCCGAA
     CCACTTTCAT TTTCTACGAC TTCTAGTCAA CCCACGTGCT CACCCAATGT AGCTTGACCT AGAGTTGTCG CCATTCTAGG AACTCTCAAA AGCGGGGCTT
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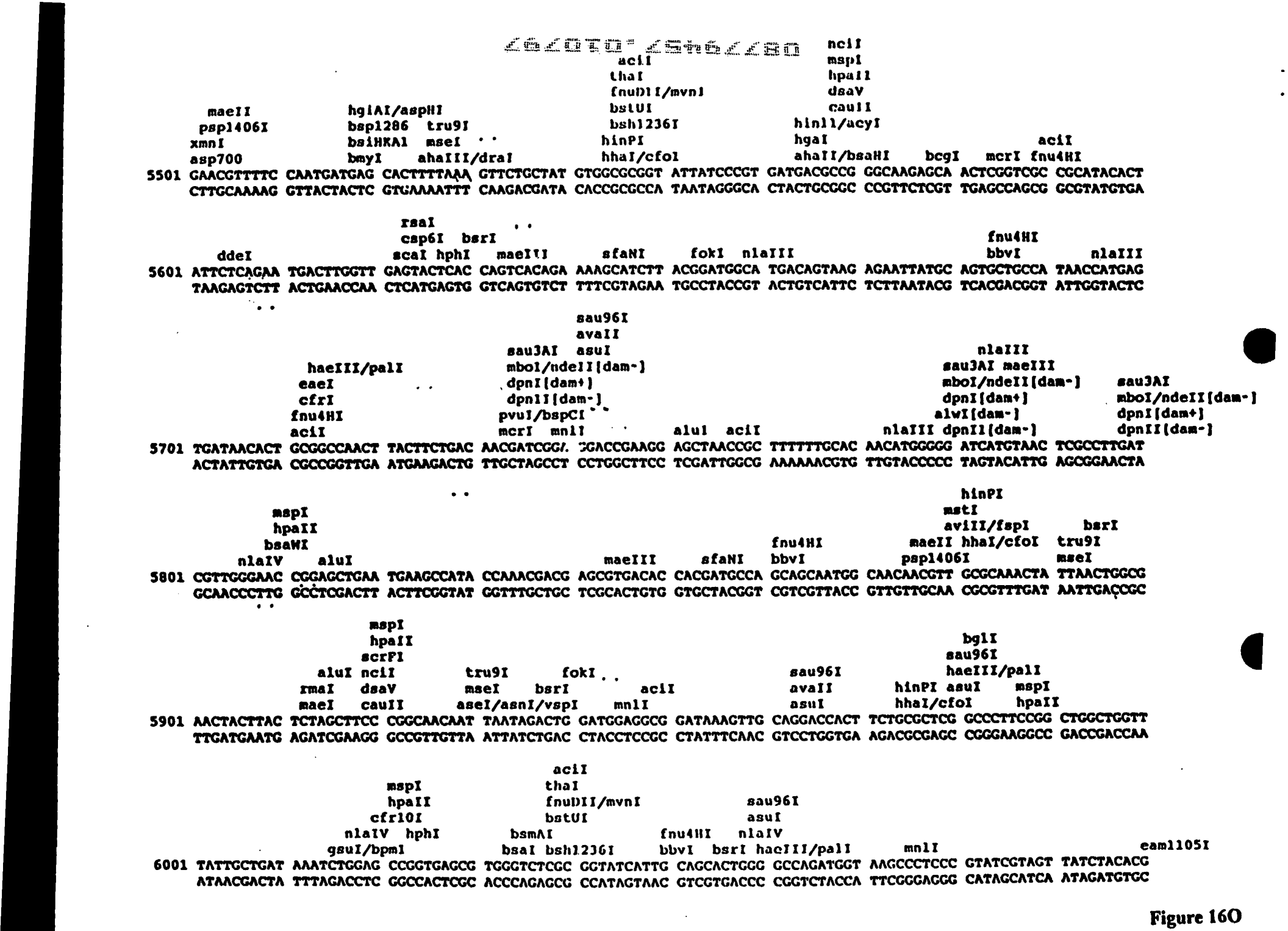
Figure 16N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bstUI
cauII
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bsp1286
tru9I
bsh1236I
hinII/acyI
xmnI
bsiHKAI
mseI
hinPI
hgaI
aciI
asp700
bmyI
ahaIII/draI
hhaI/cfoI
ahaII/bsaHI
bcgI
mcrI
fnu4HI
5501 GAACGTTTTC CAATGATGAG CACTTTTAAA GTTCTGCTAT GTGGCGCGGT ATTATCCCGT GATGACGCCG GGCAAGAGCA ACTCGGTCGC CGCATACACT
CTTGCAAAAG GTTACTACTC GTGAAAATTT CAAGACGATA CACCGCGCCA TAATAGGGCA CTACTGCGGC CCGTTCTCGT TGAGCCAGCG GCGTATGTGA
rsaI
csp6I
bsrI
fnu4HI
ddeI
scaI
hphI
maeIII
sfaNI
fokI
nlaIII
bbvI
nlaIII
5601 ATTCTCAGAA TGACTTGGTT GAGTACTCAC CAGTCACAGA AAAGCATCTT ACGGATGGCA TGACAGTAAG AGAATTATGC AGTGCTGCCA TAACCATGAG
TAAGAGTCTT ACTGAACCAA CTCATGAGTG GTCAGTGTCT TTTCGTAGAA TGCCTACCGT ACTGTCATTC TCTTAATACG TCACGACGGT ATTGGTACTC
sau96I
avaII
sau3AI
asuI
nlaIII
haeIII/palI
mboI/ndeII[dam-]
sau3AI
maeIII
eaeI
dpnI[dam+]
mboI/ndeII[dam-]
sau3AI
cfrI
dpnII[dam-]
dpnI[dam+]
mboI/ndeII[dam-]
fnu4HI
pvuI/bspCI
alwI[dam-]
dpnI[dam+]
aciI
mcrI
mnlI
aluI
aciI
nlaIII
dpnII[dam-]
dpnII[dam-]
5701 TGATAACACT GCGGCCAACT TACTTCTGAC AACGATCGGA GGACCGAAGG AGCTAACCGC TTTTTTGCAC AACATGGGGG ATCATGTAAC TCGCCTTGAT
ACTATTGTGA CGCCGGTTGA ATGAAGACTG TTGCTAGCCT CCTGGCTTCC TCGATTGGCG AAAAAACGTG TTGTACCCCC TAGTACATTG AGCGGAACTA
hinPI
mspI
mstI
hpaII
aviII/fspI
bsrI
bsaWI
fnu4HI
maeII
hhaI/cfoI
tru9I
nlaIV
aluI
maeIII
sfaNI
bbvI
psp1406I
mseI
5801 CGTTGGGAAC CGGAGCTGAA TGAAGCCATA CCAAACGACG AGCGTGACAC CACGATGCCA GCAGCAATGG CAACAACGTT GCGCAAACTA TTAACTGGCG
GCAACCCTTG GCCTCGACTT ACTTCGGTAT GGTTTGCTGC TCGCACTGTG GTGCTACGGT CGTCGTTACC GTTGTTGCAA CGCGTTTGAT AATTGACCGC
mspI
hpaII
bglI
scrFI
sau96I
aluI
nciI
tru9I
fokI
sau96I
haeIII/palI
rmaI
dsaV
mseI
bsrI
aciI
avaII
hinPI
asuI
mspI
maeI
cauII
aseI/asnI/vspI
mnlI
asuI
hhaI/cfoI
hpaII
5901 AACTACTTAC TCTAGCTTCC CGGCAACAAT TAATAGACTG GATGGAGGCG GATAAAGTTG CAGGACCACT TCTGCGCTCG GCCCTTCCGG CTGGCTGGTT
TTGATGAATG AGATCGAAGG GCCGTTGTTA ATTATCTGAC CTACCTCCGC CTATTTCAAC GTCCTGGTGA AGACGCGAGC CGGGAAGGCC GACCGACCAA
aciI
mspI
thaI
hpaII
fnuDII/mvnI
sau96I
cfr10I
bstUI
asuI
nlaIV
hphI
bsmAI
fnu4HI
nlaIV
gsuI/bpmI
bsaI
bsh1236I
bbvI
bsrI
haeIII/palI
mnlI
eam1105I
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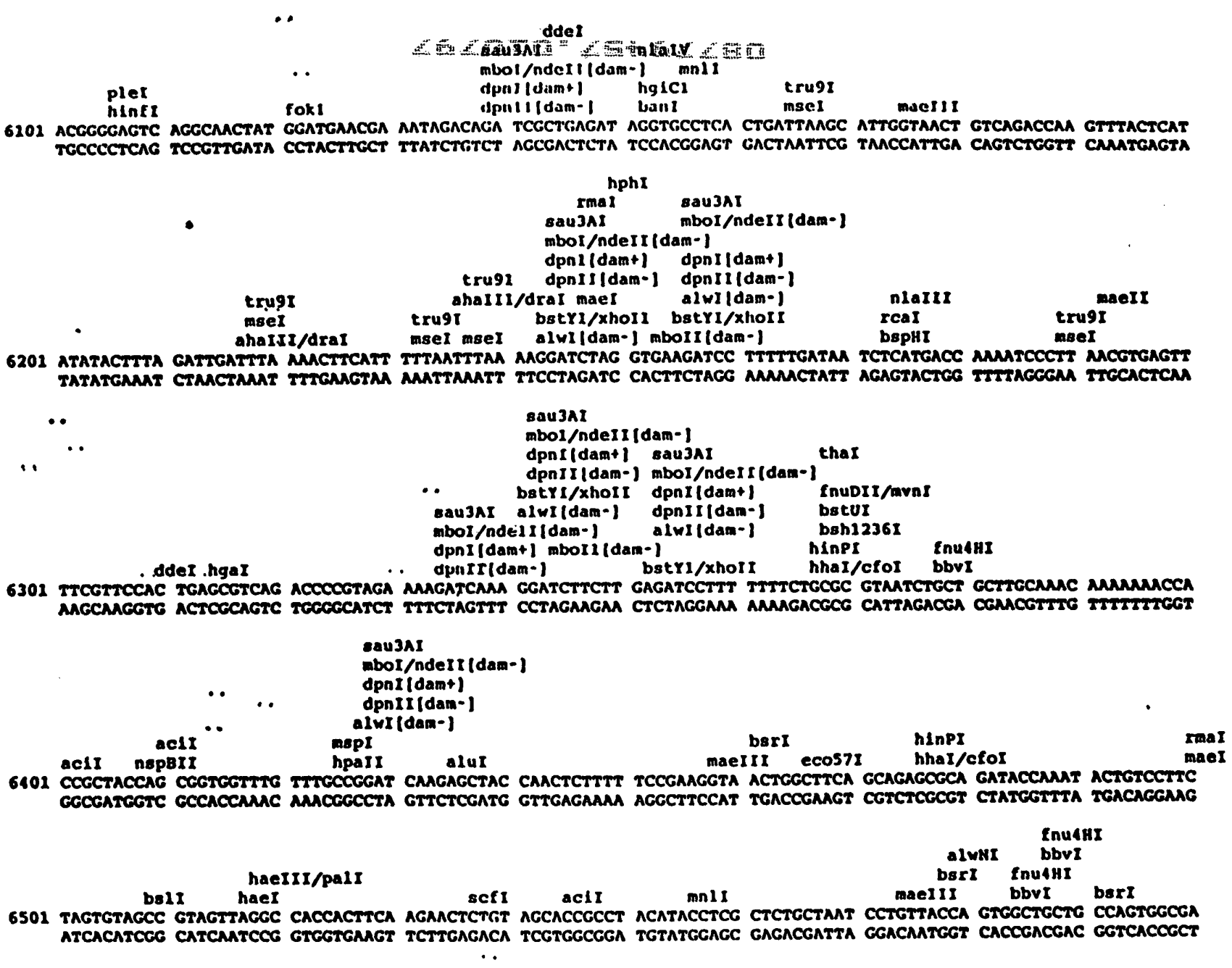
Figure 16O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dpnII(dam-) banI mseI maeIII
pleI
hinfI fokI
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TGCCCCTCAG TCCGTTGATA CCTACTTGCT TTATCTGTCT AGCGACTCTA TCCACGGAGT GACTAATTCG TAACCATTGA CAGTCTGGTT CAAATGAGTA
hphI
rmaI sau3AI
sau3AI mboI/ndeII(dam-)
mboI/ndeII(dam-)
dpnI(dam+) dpnI(dam+)
tru9I dpnII(dam-) dpnII(dam-)
tru9I ahaIII/draI maeI alwI(dam-) nlaIII maeII
mseI tru9I bstYI/xhoII bstYI/xhoII rcaI tru9I
ahaIII/draI mseI mseI alwI(dam-) mboII(dam-) bspHI mseI
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TATATGAAAT CTAACTAAAT TTTGAAGTAA AAATTAAATT TTCCTAGATC CACTTCTAGG AAAAACTATT AGAGTACTGG TTTTAGGGAA TTGCACTCAA
sau3AI
mboI/ndeII(dam-)
dpnI(dam+) sau3AI thaI
dpnII(dam-) mboI/ndeII(dam-)
bstYI/xhoII dpnI(dam+) fnuDII/mvnI
sau3AI alwI(dam-) dpnII(dam-) bstUI
mboI/ndeII(dam-) alwI(dam-) bsh1236I
dpnI(dam+) mboII(dam-) hinPI fnu4HI
. ddeI .hgaI dpnII(dam-) bstYI/xhoII hhaI/cfoI bbvI
6301 TTCGTTCCAC TGAGCGTCAG ACCCCGTAGA AAAGATCAAA GGATCTTCTT GAGATCCTTT TTTTCTGCGC GTAATCTGCT GCTTGCAAAC AAAAAAACCA
AAGCAAGGTG ACTCGCAGTC TGGGGCATCT TTTCTAGTTT CCTAGAAGAA CTCTAGGAAA AAAAGACGCG CATTAGACGA CGAACGTTTG TTTTTTTGGT
sau3AI
mboI/ndeII(dam-)
dpnI(dam+)
dpnII(dam-)
alwI(dam-)
aciI mspI bsrI hinPI rmaI
aciI nspBII hpaII aluI maeIII eco57I hhaI/cfoI maeI
6401 CCGCTACCAG CGGTGGTTTG TTTGCCGGAT CAAGAGCTAC CAACTCTTTT TCCGAAGGTA ACTGGCTTCA GCAGAGCGCA GATACCAAAT ACTGTCCTTC
GGCGATGGTC GCCACCAAAC AAACGGCCTA GTTCTCGATG GTTGAGAAAA AGGCTTCCAT TGACCGAAGT CGTCTCGCGT CTATGGTTTA TGACAGGAAG
fnu4HI
alwNI bbvI
bsrI fnu4HI
haeIII/palI
bslI haeI scfI aciI mnlI maeIII bbvI bsrI
6501 TAGTGTAGCC GTAGTTAGGC CACCACTTCA AGAACTCTGT AGCACCGCCT ACATACCTCG CTCTGCTAAT CCTGTTACCA GTGGCTGCTG CCAGTGGCGA
ATCACATCGG CATCAATCCG GTGGTGAAGT TCTTGAGACA TCGTGGCGGA TGTATGGAGC GAGACGATTA GGACAATGGT CACCGACGAC GGTCACCGCT

Figure 16P

```
                   scrFI                                      mcrI
                   ncII                                    nspBII                     bsp1286
                   mspI                          mspI     fnu4HI                      bsiHKAI
                   hpaII                         hpaII    bbvI                        bmyI
                   dsaV     pleI               bsaWI   hinPI aciI                     apaLI/sn I
                   cauII    hinfI            maeIII    hhaI/cfoI                      alw44I/sn I    aluI
6601 TAAGTCGTGT CTTACCGGGT TGGACTCAAG ACGATAGTTA CCGGATAAGG CGCAGCGGTC GGGCTGAACG GGGGGTTCGT GCACACAGCC CAGCTTGGAG
     ATTCAGCACA GAATGGCCCA ACCTGAGTTC TGCTATCAAT GGCCTATTCC GCGTCGCCAG CCCGACTTGC CCCCCAAGCA CGTGTGTCGG GTCGAACCTC

                                                                                                 mspI
                                                          hinPI                                  hpaII
                                                          hhaI/cfoI                              bslI    fnu4HI
                       ddeI      scfI                    haeII                         aciI     bsaWI    aciI
6701 CGAACGACCT ACACCGAACT GAGATACCTA CAGCGTGAGC ATTGAGAAAG CGCCACGCTT CCCGAAGGGA GAAAGGCGGA CAGGTATCCG GTAAGCGGCA
     GCTTGCTGGA TGTGGCTTGA CTCTATGGAT GTCGCACTCG TAACTCTTTC GCGGTGCGAA GGGCTTCCCT CTTTCCGCCT GTCCATAGGC CATTCGCCGT

                                         scrFI
                                         mvaI          scrFI
                                         ecoRII  mvaI
                                         dsaV    ecoRII
                                         bstNI         dsaV
                       hinPI  mnlI       bsaJI         bstNI                                                 taqI
                       hhaI/cfoI   aluI  apyI[dcm+]    apyI[dcm+]                         mnlI  drdI    hgaI
6801 GGGTCGGAAC AGGAGAGCGC ACGAGGGAGC TTCCAGGGGG AAACGCCTGG TATCTTTATA GTCCTGTCGG GTTTCGCCAC CTCTGACTTG AGCGTCGATT
     CCCAGCCTTG TCCTCTCGCG TGCTCCCTCG AAGGTCCCCC TTTGCGGACC ATAGAAATAT CAGGACAGCC CAAAGCGGTG GAGACTGAAC TCGCAGCTAA

                                                   aluI                                                  tru9I
                                  nlaIV            pvuII                                       hinPI     mseI
                sfaNI            aciI             nspBII                bsrI     aciI          hhaI/cfoI aseI/asnI/vspI
6901 TTTGTGATGC TCGTCAGGGG GGCGGAGCCT ATGGAAAAAC GCCAGCTGGC ACGACAGGTT TCCCGACTGG AAAGCGGGCA GTGAGCGCAA CGCAATTAAT
     AAACACTACG AGCAGTCCCC CCGCCTCGGA TACCTTTTTG CGGTCGACCG TGCTGTCCAA AGGGCTGACC TTTCGCCCGT CACTCGCGTT GCGTTAATTA
                                                           ^delta1.PVU

                                    scrFI
                                    mvaI
                                    ecoRII
                                    dsaV
                               nlaIV bstNI
             mnlI              hgiCI apyI[dcm+]          mspI                          aciI
         maeIII                banI bsaJI                hpaII                        bsrBI
7001 GTGAGTTACC TCACTCATTA GGCACCCCAG GCTTTACACT TTATGCTTCC GGCTCGTATG TTGTGTGGAA TTGTGAGCGG ATAACAATTT CACACAGGAA
     CACTCAATGG AGTGAGTAAT CCGTGGGGTC CGAAATGTGA AATACGAAGG CCGAGCATAC AACACACCTT AACACTCGCC TATTGTTAAA GTGTGTCCTT

                                 tru9I
                                 mseI
                                aseI/asnI/vspI
                              xmnI
        aluI      nlaIII      asp700
7101 ACAGCTATGA CCATGATTAC GAATTAA
     TGTCGATACT GGTACTAATG CTTAATT

>length: 7127
```

Figure 16Q

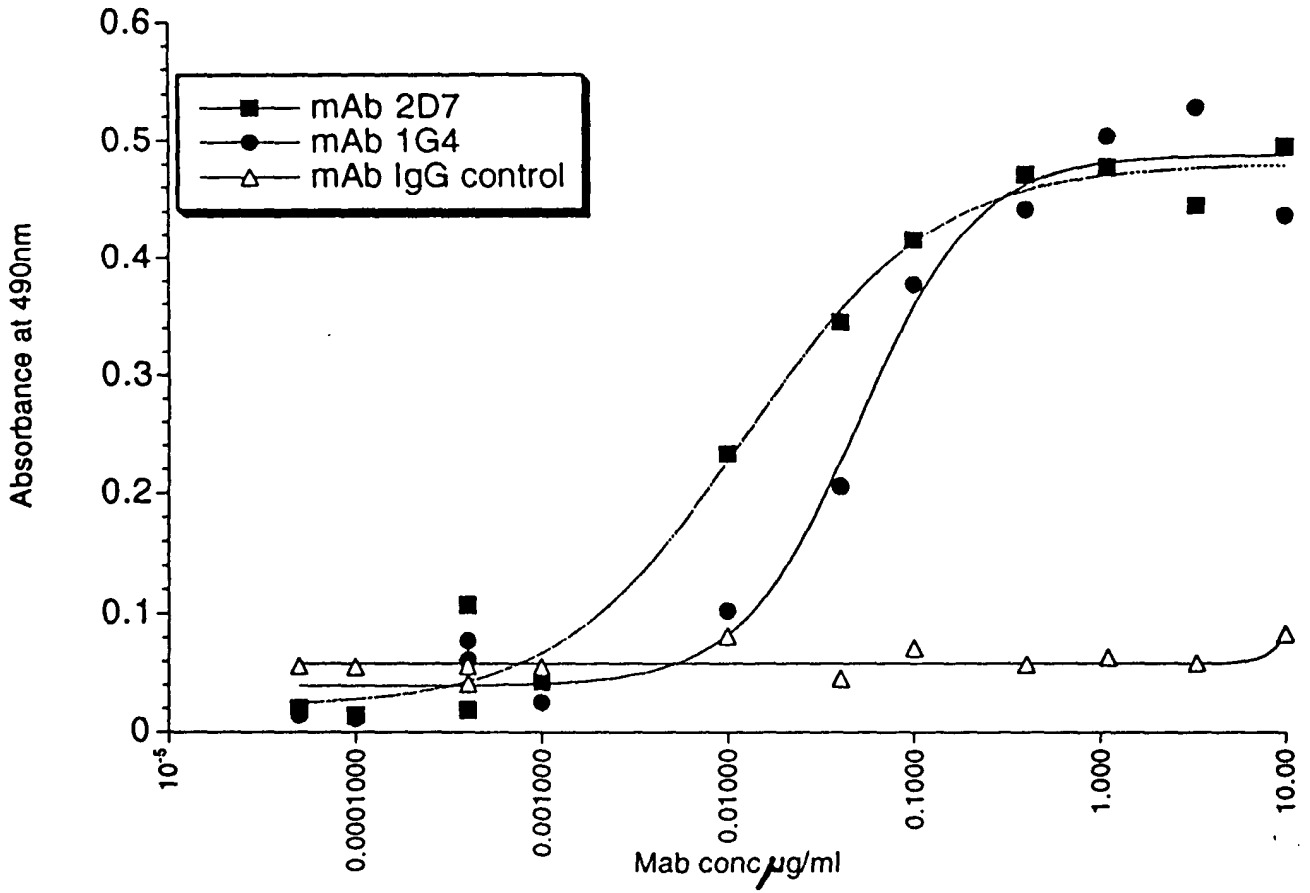
mAb 2D7
mAb 1G4
mAb IgG control
Absorbance at 490nm
0.6
0.5
0.4
0.3
0.2
0.1
0
10⁻⁵
0.0001000
0.001000
0.01000
0.1000
1.000
10.00
Mab conc µg/ml

Figure 17

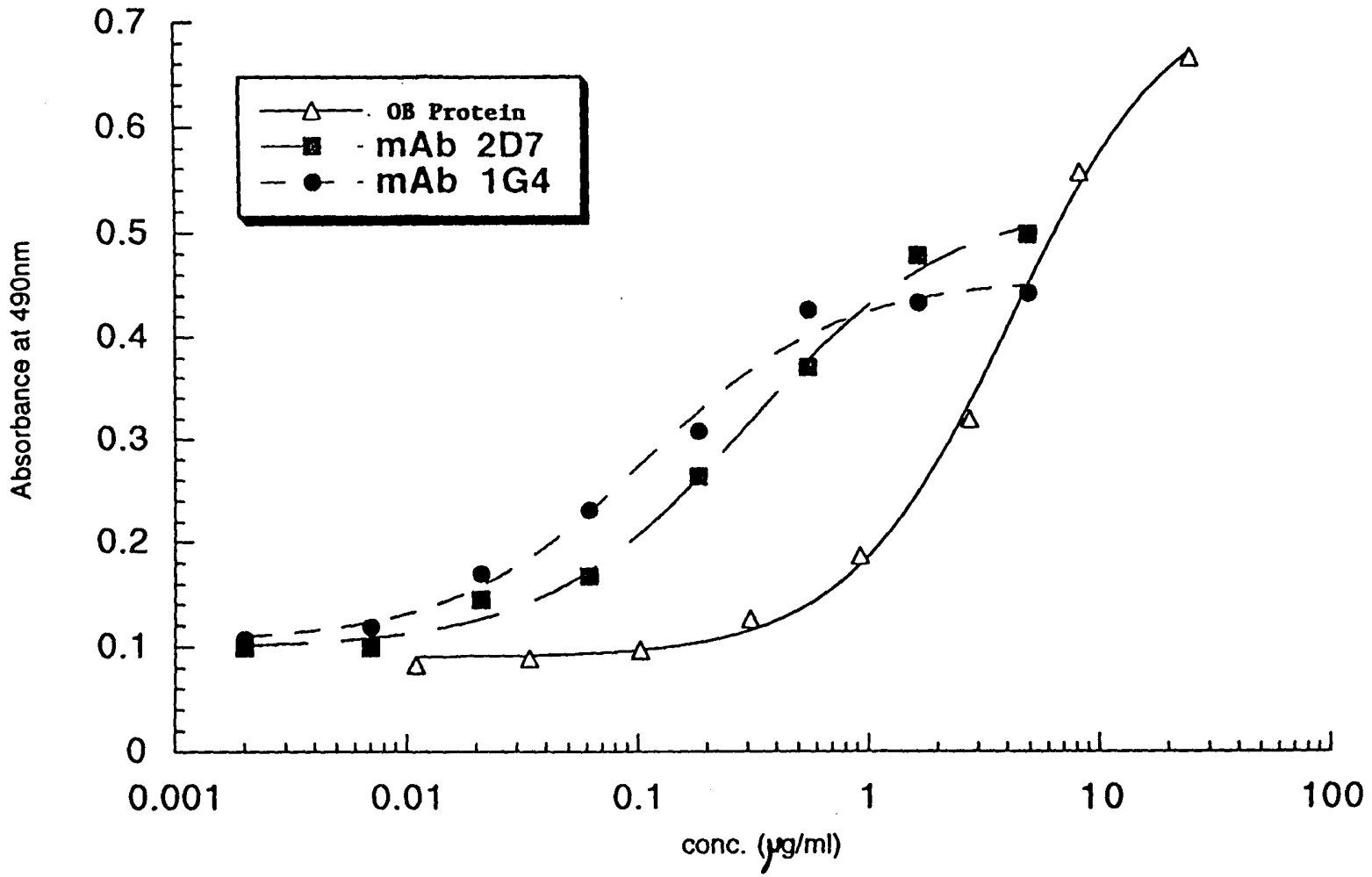
OB Protein
mAb 2D7
mAb 1G4
Absorbance at 490nm
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.001
0.01
0.1
1
10
100
conc. (µg/ml)

Figure 18

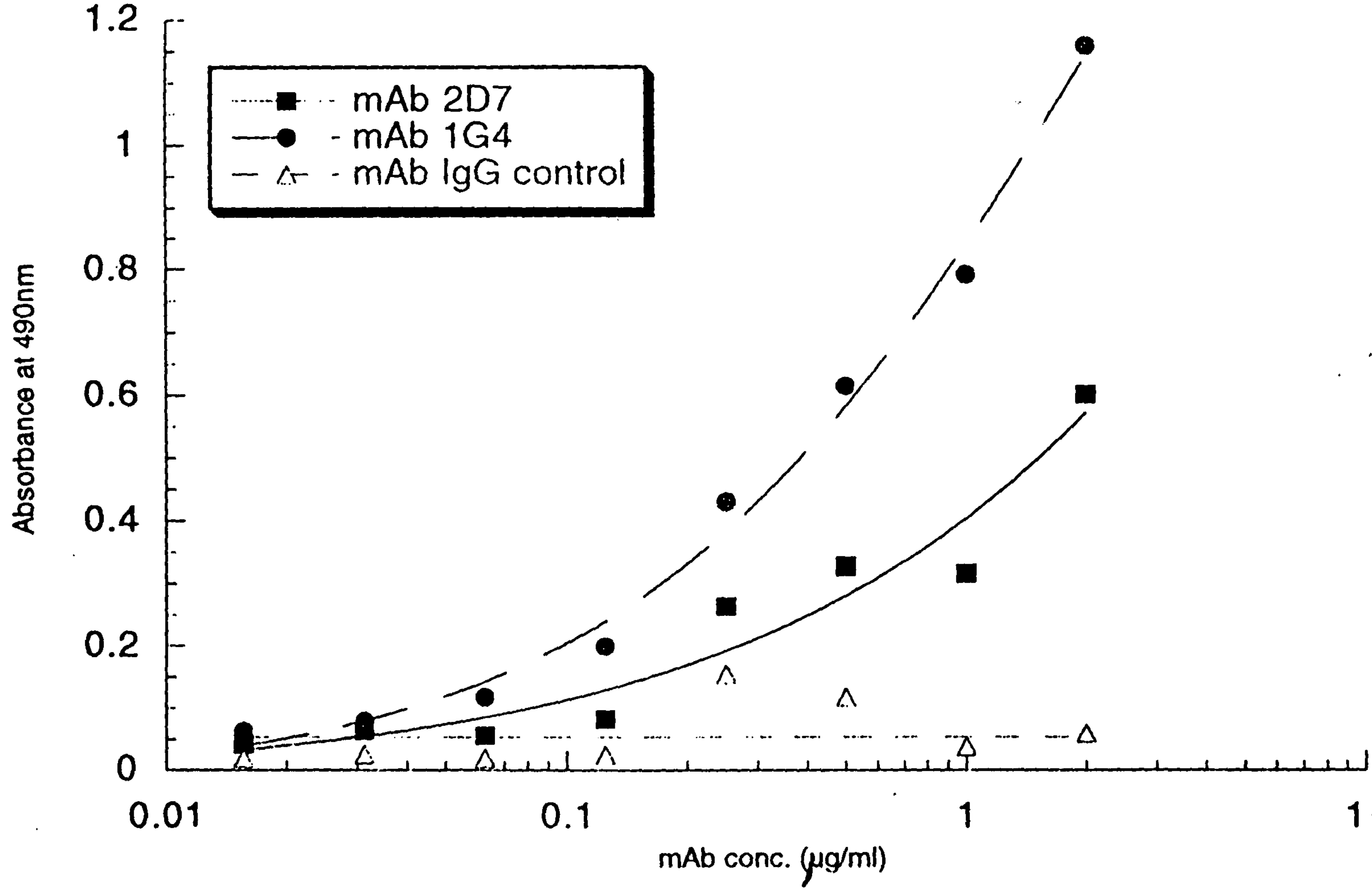
mAb 2D7
mAb 1G4
mAb IgG control
Absorbance at 490nm
1.2
1
0.8
0.6
0.4
0.2
0
0.01
0.1
1
10
mAb conc. (μg/ml)

Figure 19

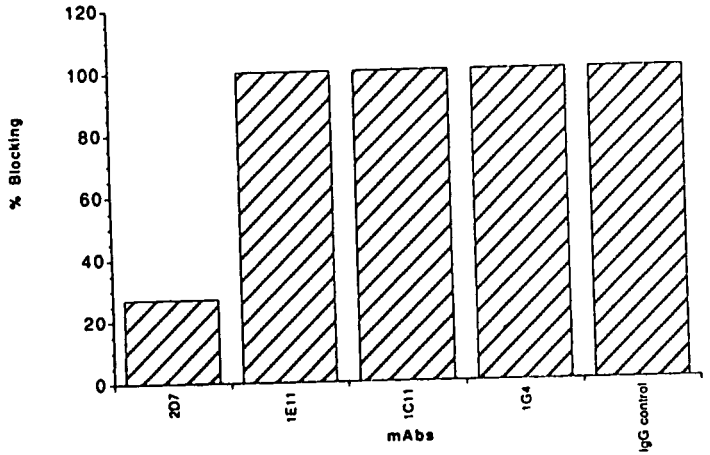

Figure 20A

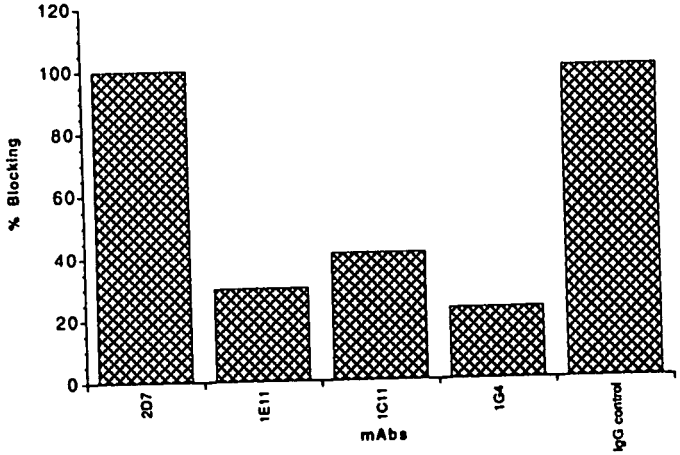

Figure 20B

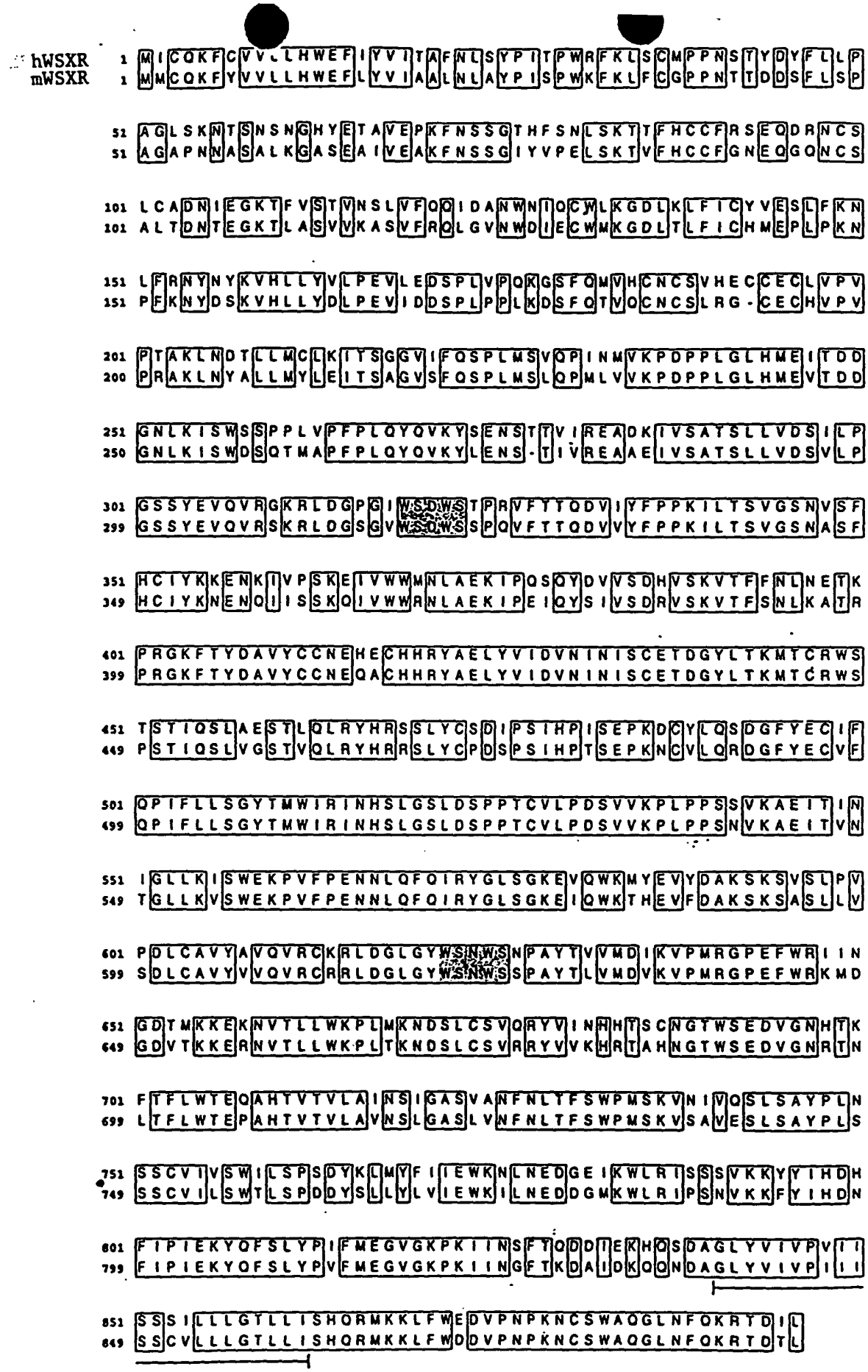

Figure 21

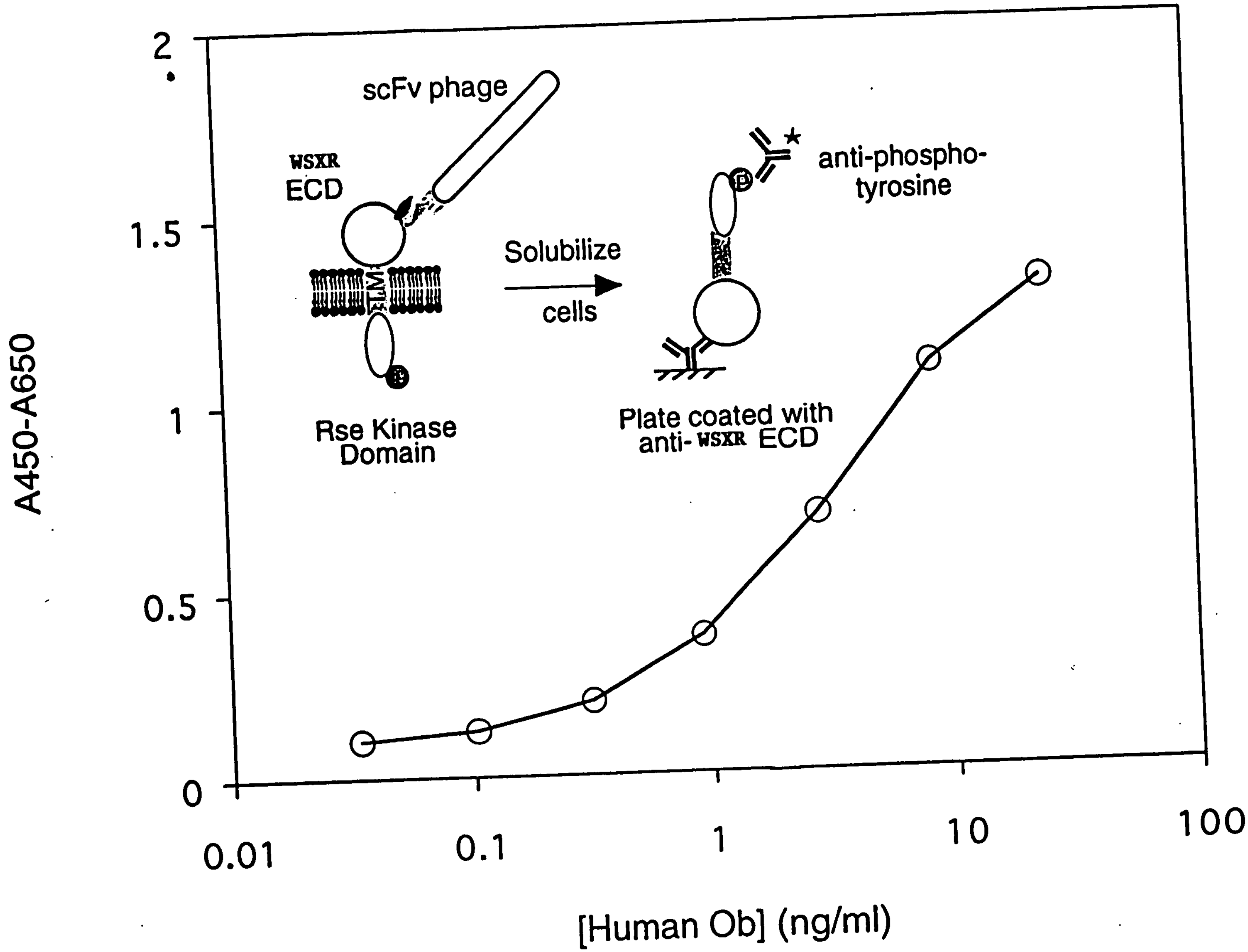
WSXR
ECD
scFv phage
TM
Rse Kinase
Domain
Solubilize
cells
anti-phospho-
tyrosine
Plate coated with
anti- WSXR ECD
A450-A650
2
1.5
1
0.5
0
0.01
0.1
1
10
100
[Human Ob] (ng/ml)

Figure 22

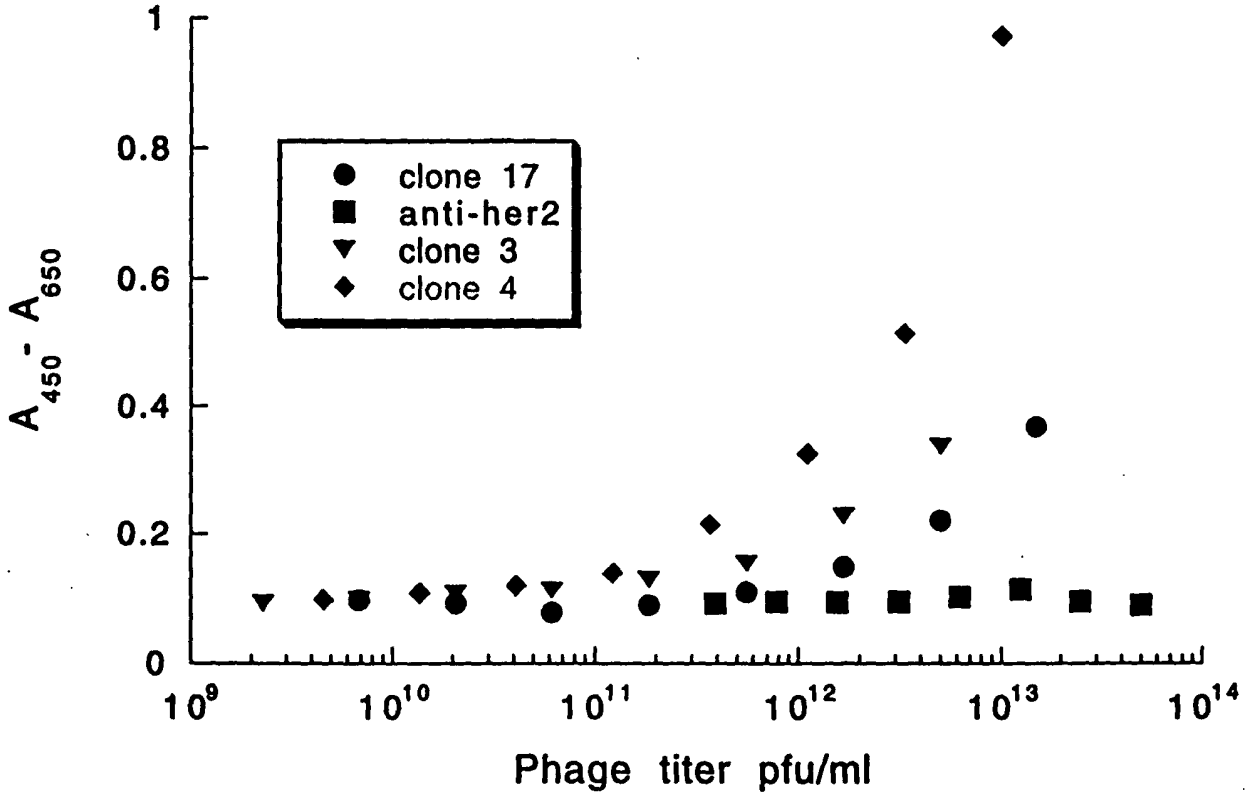
1
0.8
0.6
0.4
0.2
0
$A_{450} - A_{650}$
clone 17
anti-her2
clone 3
clone 4
10^9
10^{10}
10^{11}
10^{12}
10^{13}
10^{14}
Phage titer pfu/ml

Figure 23

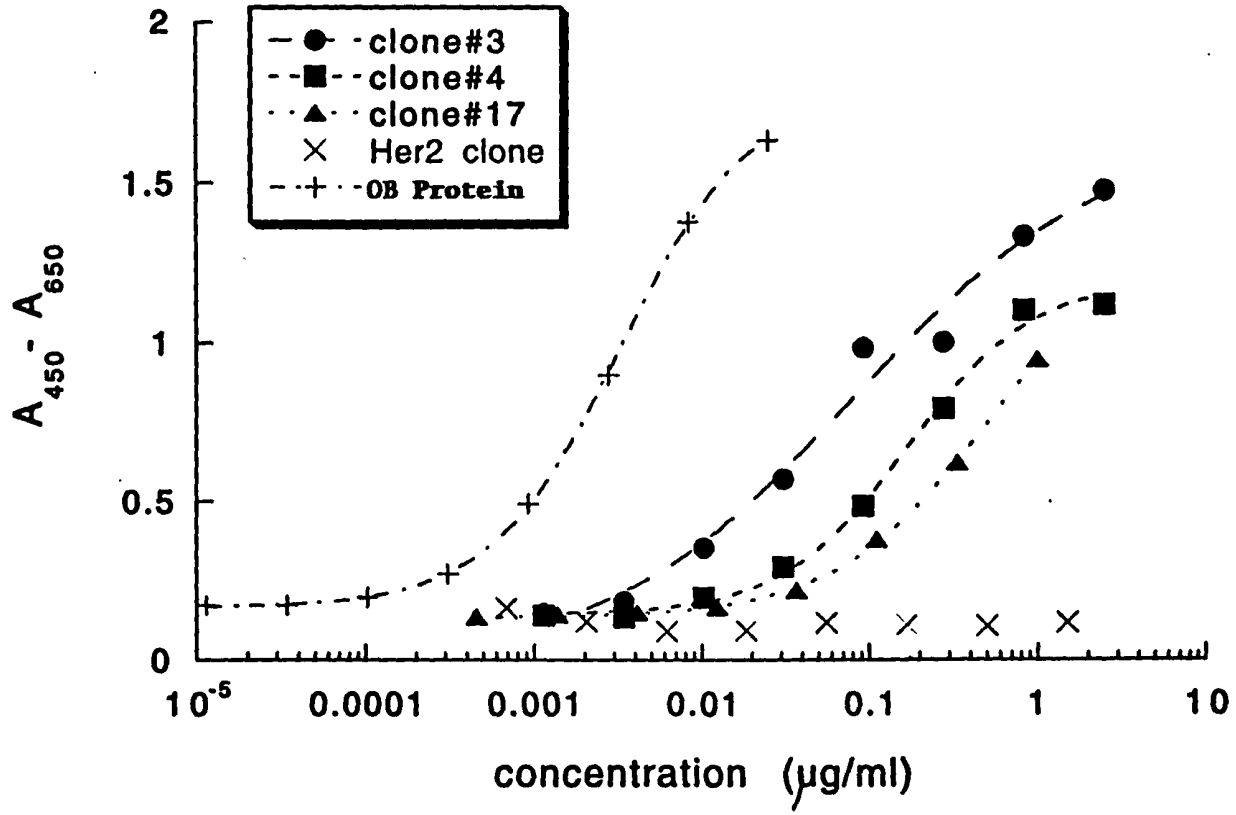
clone#3
clone#4
clone#17
Her2 clone
OB Protein
$A_{450} - A_{650}$
2
1.5
1
0.5
0
10^{-5}
0.0001
0.001
0.01
0.1
1
10
concentration (µg/ml)

Figure 24

```
17.scfv     1 QVRLQQSGGGLVQPGRSLRLSCAASGFTFDDYAMHWVRQAPGKGLEWVSG
3.scfv      1 EVQLVQSGAEVKKPGASVKVSCKASGYTFTGYYMYWVRQAPGQGLEWMGW
4.scfv      1 EVQLVQSGAEVKKPGESLKISCQGSGFTFSSYKMNWVRQAPGKGLEWMGG
                                                  CDR H1
17.scfv    51 MTWNSGSIGYADSVKGRFTISRDNAKNSLYLQMNSLRAEDTAVYYCAREP
3.scfv     51 INPNSGGTNYAQKFQGRVTMTRDTSIGTAYMELSRLSSDDTAVYYCARDR
4.scfv     51 IIPIFGTANYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCARDR
                CDR H2
17.scfv   101 HNTDA--------FDIWGRGTLVTVSSGGGGPGGGGSGGGGSDVVMTQSP
3.scfv    101 YYGSSAYHRGSYYMDVWGRGTLVTVSSGGGGTGGGGSGGGGS-SELTQDP
4.scfv    101 VVVPATSLRGG--MDVWGQGTTVTVSSGGGGSGGGGSGGGGSQSVLTQPA
                CDR H3
17.scfv   143 SFLSAFVGDTITITCRASQ---GIYNYLAWYQQKPGKAPKLLIYAASTLQ
3.scfv    150 A-VSVALGQTVRITCQGDS--LRSY-YASWYQQKPGQAPVLVIYGKNNRP
4.scfv    149 S-VSGSPGQSITISCTGTSSDVGGYNYVSWYQQHPGKAPKLMIYEGSKRP
                                  CDR L1                CDR L2
17.scfv   190 SGVPSRFSGSGSGTEFTLTISSLQPEDFGTYYCQQLI--SYPLTFGGGTK
3.scfv    196 SGIPDRFSGSSSGNTASLTITGAQAEDEADYYCNSRDSSGNHVVFGGGTK
4.scfv    198 SGVSNRFSGSKSGSTASLTISGLQAEDEADYYCSSYTTRSTR-VFGGGTK
                                                  CDR L3
17.scfv   238 VEIK
3.scfv    246 LTVL
4.scfv    247 LTVL
```

Figure 25